The Canadian
Medical Association Journal

VOL. I. DECEMBER, 1911 No. 12

INAUGURAL ADDRESS

DELIVERED BEFORE THE FACULTY OF MEDICINE IN THE UNIVERSITY OF TORONTO, OCTOBER 3RD, 1911

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THOSE of you who were present on this occasion a year ago will remember that Professor Adami talked to us about the results of the enquiry of the Carnegie Trust into the conditions of medical education on this continent. We learned that, according to that report, this university took, as we were prepared to believe, a high position, and furnished an education that would stand comparison with the best in America.

I also should like this evening to review our position as a medical school, but I wish to avoid the risk of incurring the odium of comparisons, and therefore the standards to which I shall refe in my remarks are not the standards of this continent only; they are the standards, rather, to which we should appeal, whatever hemisphere we found ourselves in, we or any other body of people who had devoted, or were about to devote, themselves to the study and advancement of medicine.

And here at the outset we have our position defined. We are a body not of practitioners of medicine, though many of us practise it, and the great majority of us hope to do so. That is not the tie. A university faculty of medicine is not a trade guild of craftsmen and apprentices; it is not composed of initiates and novices aspiring to that rank. We are a body of men and women come together to learn and to coöperate in the endeavour to learn the answer to questions that are only partially solved, questions which may be some of them completely solved before the period of our association is ended, or possibly later in our lifetime, but possibly

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not till long after our places in this world have been taken by others. But whenever the solution may come, we may now and here help to bring that time nearer. We are, or should be, all helping each in his degree; those with greater experience helping those with less, but these latter also helping in spite of their inexperience. A certain professor at a certain university was once asked whether he knew anything about a certain subject and said, "No, I have not even lectured on it." Nothing helps so much as having to expound, that is, to expose one's ignorance of a subject. Nothing helps so much as to be asked pertinent questions to which we cannot give the answer. The greatest of Greek philosophers said that the fount and source of philosophy is wonder. What he meant was this; a dull, insensate man can go through the world and see nothing in it that is worth five minutes consecutive thought; a man with a human intelligence sees on all sides that which creates in him a passion for understanding; and so long as his life is guided by this passion he is what the Greeks originally meant when they spoke of a man as a philosopher. At the age at which we enter a university we nearly all of us feel this passion, or, if we do not, what is a university for, but to awaken some measure of it in us? At the age at which a university provides us with chairs, we may sedately conceal it, but, if we are philosophers, it is still the mainspring of our being. We are then all of us here because we are bent on the attainment of some understanding of things that we do not understand, and that cry aloud to be understood.

The medicine that you are here to study is not merely a certain body of facts, and rules, and tricks that it takes just five years of about seven or eight months each to acquire, and which a year or two ago could be mastered in four. It is like the ancient torch race in which the participants in turn took up the torch and carried it a certain distance, each one handing it on to the next in order; only this torch race started in prehistoric times and is likely to go on as long as the human race inhabits the earth. The quest is: What is health, how is it to be preserved and how, when lost, restored?

If there have been times in the history of medicine when this was not the view taken of the functions of great centres of medical education such as this, times when the teachers taught their craft as masters complete in all respects, those were times when the desire for knowledge did not spring because these men did not feel the call of wonder, and when consequently medical science did not progress.

But there has probably been no time in the history of civiliza-

tion when more has been done for the advancement of medicine than in the five and twenty years during which this university has had a medical faculty. Hardly had the rich first-fruits of bacteriological investigations begun to be reaped, when a large class of other diseases, almost as widespread and as important as those due to bacteria, was shown to be caused by protozoa of which there was previously no knowledge. And at the same time entirely new light was thrown across our path by the observations and discoveries upon the dissemination of diseases by insects. Here are clues that it will take generations to exhaust.

These are truly days when whoever approaches the study of medicine must marvel; when hardly a year goes by but "some new planet swims into our ken," when the torch race is so briskly kept up that we must be content to hold our manhoods cheap for ever, if we do not burn to take our stations in the race, and leave it not disputable at last whether we have been men. And, if it is on such times as these that the first short decades of the life of this school has fallen, surely we can justly boast that it has been fortunate in the season of its birth. What is there more to be desired than to be young when there are great things doing, to be strong, and called upon to exhibit strength, and while others divide the spoils of the fights of years gone by to feel the joy of battle stirring within us and quickening the pulsation of our hearts.

Those who have been longest associated with this university can tell you of the way in which, within their memory, it has grown and developed, keeping pace with the phenomenal growth of this Dominion. But it may be your ambition that it should outstrip in the future even this, and that men at the seats of learning throughout the world, men whom the incidents of material prosperity leave unmoved, when they speak or think of Canada should speak and think of what you of the coming generation have done for medicine and your fellows.

Such an ambition as this a man will not take into his heart lightly and vaingloriously. The ambitions of a noisy chatterbox have another quality. A man who cherishes such an ambition as this could not prate and babble; his thoughts must find expression in something more lasting than words. The very height of his hopes will enforce humility and silence. He will be staking all he has, and all he could hope to possess for himself, on the devotion to an idea, and he will know that he must not peddle for the inclusion in his bargain of fame or any such vain advantage. "Who knows," wrote one of the greatest of English physicians two hun-

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dred and fifty years ago, "whether the best of men be known, or whether there be not more remarkable persons forgot than any that stand remembered in the known account of time." If these words should have been written of him, he will be content, nor will it greatly concern him if they were not, either in the one sense or in the other. He has felt the call of wonder and the call of humanity, and if he can but help, can but carry the torch the distance appointed to his share, he will hand it on willingly when the time comes to whoever should carry it farther. If there are among you those for whom university life means this, then though the granaries of Canada overflow the world, though the mines of Canada gild the palaces of the nations, you may still hope to exorcize the curse of riches.

And is not the spirit of a great university as seed that should find congenial soil among Canadians? If the world knows them, they should be self-reliant. It is not in this country that students should come with blind mouths gaping to be fed with a spoon. There is no help for us if we will not help ourselves. If a man will serve his fellows, he must give of his own, not of another's; and if he means to have something of his own to give, he must learn whereever he can learn, but he must also read and mark and inwardly digest what he has learnt until it has become part of his fibre. I remember, once upon a time, reading in an examination paper in the place of an answer to one of the questions, words to this effect: "I attended all the lectures but do not remember that the answer to this question was given." There was nothing more to be said; that man could not trust his thoughts an inch away from his note-book. Probably the question was put in order to disclose what was in his mind and not in his note-book; apparently there was nothing. His mind knew none of the joys of exercise; it was caged up, and lived on the formulæ of the note-book. How wide those miserable lectures had gone of their mark! The one thing they should have done was to make him think; they had not only failed to make him think, they had even paralysed his powers of thought. It is wonderful how small an amount of information can let loose the thoughts of a man who can think, who allows his faculty of wonder to take possession of his mind and trusts his mind to acquit itself as the mind of a reasonable being would. If only I could meet the writer of that answer I would say to him: "Get a little information and try: try and see if it does not start a thought of some kind. If it does you will probably find that you could do with a little more information. If you get this too, let your mind out

of its cage again; and you will soon be collecting information; and before you know where you are you will know something. But more important far than that, you will have learnt to trust yourself to use your faculties, you will have got on to good terms with your own mind, and your old misguided, fruitless efforts to learn the answers to specific questions and the rules for particular emergencies will be done away with for ever. You will find yourself talking sense when you least expect it, and doing the right thing when it is easiest to do the wrong."

A certain measure of self-reliance is obviously an indispensable ingredient in intelligence. Indeed a man's reliance on himself should know no measure but that of his adversary. There is no more disastrous folly than to think your adversary a greater fool than he is. It is notoriously the commonest cause of calamity in war, but it is just as commonly the cause of failure in other fields. And it is especially those who have most self-reliance that are most exposed to it. Because we feel sure that we can do as well as another anything that a man should be able to do, it is necessary to walk circumspectly, to look at the task we are undertaking from all sides, take a measure of the degree of success that others have had who have attempted it before us, and, if they have failed, endeavour to see why they failed and to provide that we do not fail for the same reasons.

If it is true that in this country our intellectual growth is not likely to suffer from lack of self-reliance, it is also perhaps true that we may, on the other hand, be under some disadvantage on account of our geographical position in the way of which I am now speaking. We are the centre for so large a district, great parts of which come but little into contact with the world outside; we are so far removed from other centres of learning of a similar importance, that we run the risk of losing the stimulating benefit of competition with other nstitutions of the same kind. A university in Holland, or in Sweden, or Finland, to take only countries of Europe with a population of about the size, or not very much greater, than that of this province, is more closely and constantly in touch with the many other centres of learning in Europe, especially those of Germany, so that it is easier for them to feel themselves a part of the world-wide organization of the efforts of the race for the promotion of medical science. We here are comparatively isolated; we enjoy less than they the benefit of coöperation and association with kindred institutions, the greatest probably in the world. It is less easy for us to keep ourselves familiar with the labours of others, to

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know how far those labours have cleared the way for us and how far they have brought into view difficulties that must be insuperable till improved methods can be devised. It is not enough to have the courage to advance against difficulties, it is also necessary to reconnoitre the ground to be covered and to know the dispositions and the numbers of the enemy, as well as those of all our allies. The more a force has to operate as a detached unit, the greater the disadvantage under which it works. Coördination of effort, a fully equipped intelligence department and all the machinery for coöperation that can be brought together where large numbers of units are working side by side, all these advantages the countries mentioned can obtain easily, while we are less favourably placed for obtaining them, and there may be times when we may find ourselves in danger of taking a too limited, local or provincial outlook; times when, therefore, conscientious labour and gallant endeavour may spend itself in vain.

The effort must be made, though it may cost us more than it costs others, to keep in touch with all the units of the great army operating throughout the world against the common enemy of disease. To fix your eyes on the horizon when you are walking a new and untried path, may be foolish, but it is foolish and dwarfish, too, to fix them upon the ground and never heed what the horizon has to show.

Access to the medical literature of Germany and France is indispensable for anyone who would become a pioneer and help to carve the way his fellows are to follow. If you do not win this for yourselves now, it will not be any easier later. And do not imagine that anyone can give you this boon. However helpful any instruction offered you in the study of a language may be, facility in reading a language, learnt after we have passed the days of childhood, has never been acquired except by laborious, sometimes painful, effort. But the efforts do not have to last long, and it is easier for you when they have succeeded to take a high place in your calling. When it is necessary to explore the sources of knowledge on any subject, and this will be often necessary if you are bent on making the most of yourself in the service of others, you will perhaps at first be astonished to find how short a distance a knowledge of English only will take you.

Why not, therefore, resolve to supply any deficiencies of this kind you suffer from now? Why should you not, instead of getting all your text-books in English, get one of them this year in German, another next year in French? Now that so much of what you learn

is learnt not from books but in the clinics or laboratories, the amount of reading necessary in such subjects is not great. All you have to do is to follow the practical work by occasional reference to your systematic text-book, keep track of the relations of the parts to the whole and confirm, clinch and supplement in the printed accounts the information you have acquired in other ways. It might even prove refreshing and stimulating to unravel with a dictionary each evening the labyrinthine intricacies of a few German sentences. That it should be possible to obtain refreshment from a dictionary sounds perhaps at first hearing unfamiliar. But I believe it is possible. I remember a distinguished scholar at Oxford, whose pupil I had the fortune to be, asking me if I had seen a certain new dictionary, at that time coming out in parts, of Sanskrit or some language of which I knew nothing. He said he read it at nights in bed and found it only too thrillingly interesting. But without being an enthusiastic philologist, to worm one's way into a sentence in a strange language is at least a wholesome change of occupation if not a recreation. Choose a really standard text-book, and it will be well worth while, if you find after a few months that you have acquired not only an orderly knowledge of, say, the anatomy of the nervous system, but the power of reading scientific German. Let us keep our horizon wide now in the days of our youth, there will be only too many opportunities for restricting it later on in life. With self-reliance and a wide outlook you should be able to do something not unworthy of a student in the university of the world.

There is much to remind you in a course of medicine such as is offered here that a university is not a technical school in which you learn merely the practice of a trade. Medicine is, always was, and always will be, a science in the making,—living and growing, blundering and getting right again, tossed aside in first one direction, then in another, but recovering itself and, on the whole, straining forward on its never-ending voyage. Even if we resign ourselves now at once, or possibly at some later time, to the most prosaic mundane view of the career we are launched upon, it is necessary that we should exercise and keep in training a critical judgement in appraising the value of the different tendencies of the day. There are at any one time a number of new tendencies in medicine, some of which come to nothing, others lead, it may be, to the most valuable results. When a physician treats a patient according to traditional rule, how often can he do so with the assurance that the treatment will give the best results that could be desired? There is a large

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proportion of his cases that he treats as he does because, so far as he knows, there is as yet no better way of dealing with them, although he would be quite willing to admit that the time may come when a better treatment may be available. That time may be to-morrow, and if he is on the alert it may be a patient of his that will be the first to benefit by the new treatment. He will feel then that he has done for that patient what others might not have done, and if that feeling does not by itself completely satisfy him it is likely that other satisfactory results may follow. Whatever way it is looked at, it is in the interest of patient and professional position, alike, that a man should not only know the traditional rules of his craft, but should have the gift of divination as to the directions in which developments are likely to occur. A physician must keep pace not only with the practice but with the theory of his day; for it is among the theories of to-day that are laid the foundations of the practice of to-morrow. And in order to take a worthy place in his profession, a student must study the medicine of the future.

It is the same with any living and growing profession. A naval officer nowadays is required to be a scientific man; he must be a mathematician, an engineer, an electrician, a chemist, perhaps an aeronaut as well as a seaman; and one can easily imagine the lamentations and ridicule that all this specialization meets with at the hands of some retired sea-captains who were at their prime in the good old days, before the service went to the dogs, some forty years ago. But it is not into the hands of these railers that the direction of naval education has passed, but into those of men who with a wider horizon see what the times demand, and in deadly earnest have felt their responsibilities for the life of a nation.

Gentlemen, you are approaching the time when no less a responsibility will be yours. The day is not far off, perhaps, when you may feel it in no less deadly earnest. A university is an organization that is rightly based on principles different from that strict discipline which is the pride of the naval and military services. A university gives facilities, where in the services they issue orders. It rests with you to avail yourselves or not of the facilities, but is it not as clearly your duty to make the most of them as it is the midshipman's duty to obey orders?

Now let us for a moment think which of the facilities that a university offers are the most likely to appear to you optional. To begin with there are railers abroad who were students of medicine at an earlier epoch in the history of the art; excellent men many of them too, and with much good work standing to their credit;

may we none of us deserve less well of our fellows than they have! But our days are not their days; and when they, like the retired sea-captains of a former generation, breezily rail at the new-fangled notions of the medical schools of to-day, more often than not they know nothing of what they are talking about. Their perspective is still taken from a point that the human race left behind twenty, thirty, or forty years ago. At any rate it is your own independent judgement that is to decide such matters for you, and it rests with you only to see that your judgement is not passed frivolously or ignorantly. If we will be independent and rely only on ourselves, let us at least see to it that we can stand firmly and honestly against all comers by ourselves. Find out for yourselves what the objects held in view by the leaders in medicine are; and if you hear that a whole regiment of nameless men, your colleagues, are spending years or have spent their lives in pursuit of this or that object, in the service of medicine, don't, as you stand on the threshold of the house of medical science, with your hat on the back of your head, so to speak, and your hands thrust into your pockets, condemn them for fools. This must be something that needs looking into. Men don't generally give up their lives for nothing. There may be something in it after all. At any rate it would be as well not to give an opinion till you have one of which you need not be ashamed whoever contests it.

From what quarter the next new rays of light may come, and what dark corners of our ignorance they may illuminate, no one can for certain tell, not even the youngest of us. The man that has so prepared himself that he is fit to volunteer for service whatever kind of work developments may require, that is the sort of man that will be wanted.

May I, for the sake of illustration, refer to the subject dealt with in the department with which I am here associated. It is appropriate that I should refer to it, because this university is giving, and about to give, on a more liberal scale than has been customary in the past, the facilities for study in this direction. It may therefore appear to some of you that this university is attempting more than is necessary, may be about to lead you astray into by-paths and distract your attention from what are the legitimate aims of medicine throughout the world. But pathological chemistry is not really a new subject. It has grown out of the labours of men, your colleagues, who worked in search of light on questions that arose before their minds in days when its name had not been formulated. In their lifetime a science was

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developing, revealing marvel upon marvel at a rate unparalled in the history of human knowledge. If you think of what was known of chemistry a hundred years ago, and of what is understood by it now, you must agree that no science has in such a space of time ever grown in such a way. No science has created more new conceptions of the nature and constitution of the universe. It has given a local habitation and a name to those airy nothings dreamt of by the earliest Greek philosophers; and it has advanced the firing line of speculation and experiment beneath what seem the last defences of material truth. As this extraordinary advance was developing, the intelligence of men, whose hearts were set on the same ends as are now yours, was here and there roused to apply similar methods in the quest of light on their problems, and those pioneers gave to science many of the facts on which both modern physiology and modern pathology are built. As the number of points of contact between chemistry and biology increased, they came to be referred to as physiological and pathological chemistry. And gradually this conception was formed; the life of an organism in all its activities manifests itself through and, materially speaking, consists in chemical changes in the substances that compose that organism. The study of the normal course of these changes constitutes physiological chemistry; the study of the disturbances to which this normal course is liable in disease constitutes pathological chemistry. Every function of the body is a manifestation of ordered chemical change. Every disease is a manifeststion of disordered chemical change. By determining the nature and cause of the disorder you determine the nature and cause of the disease; and till this has been determined no rational treatment of disease is possible.

But, you may say, granted that this is a scientifically interesting conception, it is certainly very abstract, very remote from the practice of medicine! But what is abstract to one generation may be a well-worn implement in the mental equipment of the next. Even if it is remote from the medicine practised at the present day,—that is a point on which you may do well to get other advice than mine,—you should be preparing yourselves, not only now, but every day for the rest of your active medical life, preparing yourselves for the medicine to be practised to-morrow. Quite apart from the fact that three-quarters of the pleasures in store for you should consist in watching with intelligence the development of your ever-growing, living art, your standing in the world, and in your profession throughout the world, will depend on how far

you are prepared and fit to practise each development of medicine as you are called upon to do so. To keep abreast with the times you must see where the times are leading you, not walk with your eyes shut and trip up over every unexpected obstacle in your way. If you do that you are bound to drop behind.

But I am not going to take advantage of the position into which my colleagues in their kindness have placed me this evening by waving a brief for pathological chemistry in your faces. Let me take an instance from about twenty years ago. It is just about twenty years since the first class in practical bacteriology was given in England to ordinary medical students not yet graduated. It was a voluntary class, and eight or ten of us by special invitation were given instruction in staining and growing bacteria two or three nights a week during one summer term. And we thought it very fascinating, perhaps because at that time it seemed so remote. But I remember our satisfaction when, about the same time, one of the members of that little class established the diagnosis of a case of anthrax in the early stage by taking a smear in the casualty room late one evening when all our seniors were away; and I remember the proud assurance with which we sent for the visiting surgeon to come and excise the malignant pustule from the man's cheek. This was done and the man recovered. If only I could reach the other members of that class, I feel sure that those of them whose lot has removed them from the facilities of a university, when they think of all that practical bacteriology has come to mean in medicine, would acknowledge their gratitude for the help which that little freak class, as it then seemed to us, has been to them.

To take one more instance: the history of medicine in the past twenty or thirty years has been remarkable for the progress in what is called preventive medicine. A new service of public health is being created which has already done much, and will do much more yet, for the welfare of the race. Many, though not all, of the greatest problems in public health are being attacked with energy and resolution, and many as are the advances that your fathers have seen, they are likely to be but little compared with those encompassed in your time. In these matters the rate of progress will largely depend on the light which you disseminate and the leading you offer to the public among whom you live. There are questions of the greatest importance to the public health in which but little has been done: we strain at the house-fly, and swallow the scourges of society; we isolate chicken-pox, and let the graver malady breed where it will. But little has been done

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because the advice that an ignorant public fancies is not that of those most entitled to give advice, not those qualified by special knowledge, as you will be, and by the enlightened fairness and scientific honesty that your training should foster; the ignorant public takes rather the advice of those whom they like to speak of as men of the world, who are too often also in some matters men of the flesh and the devil. If you find yourself opposed to them, remember that they will fight you from behind a halo, not of sanctity, but of infallibility, the vapours of ignorance and vice. The body of men that can dispel this cloud, and they should be medical men and women, will do more for public health than the sum of all that has been done up to the present time. What has seemed impossible hitherto need not be impossible to you of the next generation. Look into it for yourselves, with no less reverence for the endeavours of others who have failed than hopeful confidence in the ultimate victory of intelligence.

May I now close by, in a few words, summarizing what I have said, I am afraid, at too great length. I have exhorted you to remember that as this is a great country and this a great university you should not rest content till this school has done, in your generation too, at least its full share of the creation of the medicine of the future. To do this you will need all the self-reliance you can muster, but at the same time all the humility and wariness which a true appreciation of the magnitude of your undertaking must impose; and if you wish to take a leading position you must not at the same time be meticulously afraid of getting in advance of your day.

Gentlemen: much, if not all, that I have presumed to say to you must appear commonplace. I console myself with the reflection that common-sense is the faculty of rescuing what is common knowledge from oblivion, and on rare occasions, say once a year, it may not be a bad thing to pass in review some of the things that are liable to get out of sight.

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ADDRESS IN GYNÆCOLOGY

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Mistakes in Diagnosis and Treatment

FROM the standpoint of a consultant of over thirty years' standing, I have learned something of the mistakes in diagnosis and treatment made by myself and others. I have conceived the idea that some consideration of this subject might not be unprofitable before a meeting mainly of general practitioners.

It is a trite saying, that we learn more from our failures than our successes. It is, perhaps, equally true that we learn more from our mistaken than our correct diagnosis. The lessons we thus learn are often painful and the experience bitter, but they are not likely to be forgotten.

Accuracy in the diagnosis of pelvic conditions depends mainly on education of the sense of touch. This can only be obtained by long and patient practice and many opportunities for making examinations. All teachers of practical gynæcology will bear me out when I speak of the difficulty in giving to the medical student more than a few opportunities on the patient. It is far other with the teacher of clinical medicine, who can, in most cases, allow an unlimited number of students to examine a chest or lung case.

Nevertheless, many fewer mistakes would be made if attention were given to a few simple details. In this, as in everything else in medicine, the grand safeguard against mistakes are system and method in case-taking and examination. As a rule, a woman's pelvic organs cannot be satisfactorily examined if she lie on a bed or couch. The many advantages of a table, a firm surface, for the physician's comfort, have only to be experienced to be realized. I am well aware of the difficulty in getting many women to consent to this, especially if the practitioner be young. Suitable personality and tactful manners will, in most cases, lead to success.

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The condition of the adjacent viscera, the bladder, and rectum, is all important. The rectum must have been emptied before the patient comes to the examining table. With reference to the bladder, my own practice, learnt by personal experience, is to empty the bladder by catheter after the patient is in position on the table. The advantages are that: (1) We may note the presence or absence of discharges, such as that of gonorrhœa, about the genitals, and their character, a very important kind of evidence which we should lose if we allowed the patient to pass water naturally. (2) There are many women who when asked to pass water immediately before a pelvic examination are unable from nervousness to do so. (3) We get an uncontaminated specimen of urine for examination.

When, from a suitable position of the patient, whereby the abdominal muscles are thoroughly relaxed, we may still have to contend with rigidity from nervousness or ticklishness on the part of the patient, this may be overcome by a manœuvre which I frequently practice with success. It consists in making a series of circular, frictional movements over the lower abdomen. These should first be in a circle of relatively wide diameter, the whole abdomen, but gradually narrowed to one much smaller. What do we gain by this manœuvre? If gently executed we overcome rigidity of the abdominal muscles and we displace gradually the intestines. These movements are the first thing done in the practice of the Thure-Brandt method of pelvic massage.

Medical students and doctors of little experience have often complained to me of being unable to reach the structures at the upper and back part of the pelvis because their fingers were too short. The relatively long posterior vaginal wall can be, in a sense, shortened by steady, gentle, continuous pressure on the perineum, whereby it is partially turned into the vagina.

In physical examination for pelvic diagnosis I would strongly urge caution in the use of the sound. Apart from the danger of inducing abortion in unsuspected pregnancy, unless strict asepsis be practised, the sound is a dangerous instrument. Many a woman has died of the uterine sound. In the great majority of cases it cannot be used without abrasion of some part of the uterine canal. Unless instrument, hands, and field of operation be sterile, there is great danger of infection, and this has often been the consequence, setting up more or less serious, and sometimes fatal, pelvic inflammation.

With all due respect to the great Sir James Simpson and others whose names are so intimately connected with the use

of the sound, I am convinced that it is a much overrated instrument. In hands skilled in bimanual palpation it is rarely necessary, while in hands unskilled, it will hardly ever add to useful, practical understanding of the case. As a consultant I have learnt that the sound is a great deal too much used by the general practitioner.

Mistakes in the diagnosis of retroversion of the uterus, either way, that is to say, mistaking retroversion for other conditions or mistaking other conditions for retroversion, are certainly amongst the commonest. But, indeed, accurate diagnosis in complicated conditions (and complicated conditions are common and the most important), is often most difficult. A common mistake is overestimating the importance of retroversion, of the displacement *per se*, in a complicated case, as of pelvic inflammation directly inducing the displacement. Such an imperfect or mistaken diagnosis may lead to an attempt to replace the uterus by sound or repositor, and to its mechanical treatment by pessary, with, most probably, disastrous results.

This leads me to speak of mistakes in overestimating the importance of deviation of the uterine axis from the normal. No more fierce, wordy wars have ever been fought than by gynæcologists over the relative importance and order of occurrence of displacements, and those changes in the circulation and nutrition of the uterus to which we apply the term chronic metritis. The *Transactions of the Obstetrical Society of London* of about forty years ago teem with the discussions. While most of us claim to have obtained a position nearer the truth, the consultant still finds in the body of the profession imperfect views and inadequate conceptions of the subject. It seems often to be forgotten that the uterus in health is essentially a very movable organ. It is pushed backwards by a distended bladder, forwards and upwards by a distended rectum, and by every act of respiration, especially by forced respiration, as in coughing, vomiting, or violent effort, it is deviated from what may be considered the normal, and all such displacements, temporary it is true, are attended with relatively little in the way of symptoms attributable to the uterus.

I am next led to speak of another mistake which we have made in the past, but which we are, most of us at least, now rectifying, and that is in failing to recognize that in many women a displaced uterus is only one element, though certainly a very important one, in a case of more or less general descent or sagging of abdominal viscera, the condition of enteroptosis. For many years I have,

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in every case I examine, made a point of examining for the position of the kidneys as well as other viscera of the abdomen. Displacements of these organs in gynæcological cases are of extreme frequency. It is true that descent of the kidneys does not always cause symptoms. In exceptional cases the symptoms are grievous. In the parous woman they are especially so. The commonest and perhaps the most important mistake here is in overestimating the importance of the pelvic condition and neglecting to take into account the rest. The repair of a lacerated perinæum, the necessary colporraphies, and the performance of a selection from the various forms of fixation or suspension of the uterus, may for these reasons be disappointing in their results.

In the management of displacements by many practitioners, mistakes are often made in overestimating the usefulness of pessaries, in the selection of cases suitable for their employment, in the selection of a pessary for a particular case, and in the neglect of the very frequently necessary preliminary treatment of the patient and the parts against which the pessary will lie. Ofttimes, too, there is lacking an adequate conception of the necessary care of a patient who is wearing such an appliance. The consequence is that appliances, which in suitable selected cases are undoubtedly most useful, suffer undue and unmerited discredit.

The sensations of the patient which suggest to her mind displacements of the uterus, and which are apt to be accepted by the inexperienced physician, are often due solely to vaginitis. This condition, when of the fundus of the canal, where it is often mainly or exclusively present, can only with ease or certainty be diagnosed and treated by the Sim's method of examination. This method of examination, it would appear, is learnt by only a small number of those who practise gynæcology. It requires the patient to lie on a table in the necessary position, to have her clothing loose, and to breathe quietly and naturally. All these conditions being fulfilled, the use of the Sim's speculum is merely an accessory, for the bent handle of a pewter spoon or even the finger will sometimes suffice to retract the perinæum and posterior vaginal wall and expose the now distended vagina, the result of atmospheric pressure acting under altered relations of abdominal and pelvic organs. A careful examination by this method (which, I contend, should be practised in every case with pelvic symptoms) will often lead to the discovery of a degree of vaginitis which can be most satisfactorily relieved by a few applications of silver nitrate solution.

Perhaps no more common mistakes are made than in the

diagnosis of pregnancy, and all will bear me out when I attempt to emphasize their importance. Of the effect of such mistakes on the reputation of the practitioner, I feel sure that some at least here present are prepared to bear me out. Failure in the recognition of existing pregnancy is rarely pardoned by a woman. Failure to discover that she is performing the supreme function of her sex, and to give her credit for it, is to her a grievous fault. Apart from this, there is the obvious importance of early knowledge of the fact in order that plans may be made and necessary arrangements put in train. The cases are few in which a diagnosis cannot be made by a careful investigation of history, symptoms, and physical signs, negative and positive. I must, however, not forget to admit that we are not always freely admitted to possession of each of these sources of evidence. Many women are proverbially inaccurate as to dates and in the description of symptoms, and we must ever be on our guard against the designing woman, legitimately or illegitimately pregnant, who wishes to rid herself of the product of conception, and who hopes that by the use of the sound or other instrument incautiously used by the practitioner, her purpose may be effected. While history, symptoms, and the condition of the breasts are all important, the supreme value in the estimation of the various sources of evidence is to be placed on the bimanual palpation of the uterus. I am in the habit of impressing this on my students. If, with empty bladder and rectum, and everything else favourable in the position of the patient, you cannot easily define the uterine body, so distinctly firm in the nulliparous condition, then suspect pregnancy. It is thus soft in the condition of pregnancy, and comes nearly to the feel of the roof of the vagina and other structures in the pelvis. If the uterus can be defined, the value of the so-called Hegar's sign—the sudden increase of size above the junction of the body and the cervix—is very great. It is in early pregnancy that mistakes in diagnosis are most frequently made, but I have known not a few in the more advanced stages. Cases are not unknown of all the arrangements having been made for operation for ovariotomy, and the patient, meanwhile, being delivered of a full-term child. This has occurred to men of world-wide reputation, the authors of books, and numerous papers on obstetrical and gynæcological subjects. In one instance, which occurred to me, ovarian cyst had been diagnosed, and the woman being in great distress from the enormous distension, she had been twice tapped. She travelled over five hundred miles to reach me for operation, all the preliminaries having been arranged.

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I found her resting on her hands and knees in my waiting-room and in that position she had remained during the night in the sleeping car. On examination, I was immediately able, through the cervix, to recognize fœtal parts. The case proved to be one of twin pregnancy with hydramnios. The gravid uterus had been tapped, and the liquor amnii drawn off. Beyond a doubt, the true nature of this case would have been recognized by a careful consideration of history, symptoms, and physical signs, instead of by the mental attitude of taking certain things for granted. Recorded instances are by no means single of operators, when doing hysterectomy for fibroid, being surprised by the discovery of early pregnancy. It is safe to say, from what we know of the very human nature of our profession, that many more have never been recorded. The sudden increased activity of growth of fibroids previously unsuspected, in the gravid condition of the uterus, certainly, in many such instances, must have led to the experiences just alluded to. I venture to make the assertion that they are very rarely unavoidable.

So much for the diagnosis of uterine pregnancy, undoubtedly often beset with difficulties. The cases are rare in which there is a necessity for immediate action. In all cases of doubt or difficulty, the doubts should be frankly stated, and time and further opportunities for examination requested. The cases are few in which the practitioner will not by such a course retain the confidence of the patient and her friends, whereas a positively given mistaken opinion will, in most cases, be disastrous to his reputation.

If the diagnosis of uterine pregnancy be difficult in certain cases, it is vastly more so in the case of extra-uterine pregnancy, whether early or advanced. I venture the assertion that there is no operator of large experience in pelvic surgery who has not at some time or other operated for tubal pregnancy and found something else; or has operated expecting something else and found ectopic gestation. I have to confess having made such mistakes more than once. There are many deviations from what may be called the symptom-complex of this grave condition. In the early stage of extra-uterine pregnancy the conditions most apt to be confounded with it are the various inflammatory conditions of the uterine appendages, cystic adherent ovaries, hydrosalpinx, appendicitis, etc. In the rarer instances of rupture of the gravid tube with speedy fatal hæmorrhage (and the danger of this is much greater when the gestation is in the relatively indistensible and more vascular part of the tube, near to the uterine end), the symptoms

have in several instances given rise to the suspicion of death from poisoning or by violence.

This suspicion was very strongly entertained by the friends of a patient whose case was reported many years ago to the Montreal Medico-Chirurgical Society. This woman, who some time previously had been a patient of mine for office local treatment, ceased to attend, and the next thing I heard of her was that she had died seven hours after having been seized with violent abdominal pain and other symptoms. The nearest doctor had been called, and, failing to recognize the real nature of the case, he had administered morphine. The death of the patient was attributed by the friends of the patient to the drug. An autopsy was demanded by the doctor, and at first refused, but when threatened with a coroner's inquest they finally consented. The belly was found full of liquid and clotted blood which had come from the rupture of an expansion of the tube no larger than a shelled almond, situated one inch from the horn of the uterus. Even in this case a careful enquiry into the history and symptoms preceding the attack might have suggested the true nature of the case, for the woman had had pelvic symptoms which had been relieved by treatment, after which she had become pregnant. As Gaillard Thomas pointed out in a paper written by him many years ago, in the majority of the cases of extra-uterine pregnancy reported, the patient is pregnant for the first time, or for the first time after years of sterility, during which she has suffered from pelvic symptoms, and from which she has partially or completely recovered, spontaneously or while under treatment. My own experience amply bears out these observations of Thomas and others.

The correct diagnosis of uterine fibroids, while usually easy, is sometimes most difficult, and the history of the subject is fraught with mistakes. I have more than once opened the abdomen for operation to remove a uterine fibroid to find that I had to deal with the much simpler condition of intra-ligamentous cyst. So tensely filled are these cysts sometimes and in their process of growth so close do they lie to the uterus, that by position and consistence they now and then closely simulate the common, solid tumour of the uterus. The diagnosis of uterine fibromyoma from intrapelvic cancer, usually ovarian, in its early stages, is by no means always easy. One mistake of this kind occurring a good many years ago mortified me very much. The physical signs were such that my diagnosis was multiple fibroids. In a few weeks failure of flesh and strength and the appearance of peritoneal fluid aroused

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suspicions of malignant disease, which were confirmed by exploratory operation.

All ovariotomists and abdominal surgeons of much experience have been disappointed and saddened by the appearance of intrapelvic and abdominal cancer within a year or two after a smooth recovery from the operation of removal of an ovarian tumour, apparently quite innocent in its character. Lawson Tait used to remark something to the effect that every ovarian tumour had in it the elements of malignancy. His remark was doubtless the outcome of the experience I have alluded to. It would be more correct to say that if the whole of every ovarian tumour were submitted to careful microscopic examination by a competent pathologist, many which appear benign would show malignant characters. This fact is a strong argument, if any were needed at the present day, for the prompt removal of every ovarian tumour as soon as possible after its discovery. In malignant tumour of no other organ is radical cure by operation so hopeful.

Nothing in the experience of the gynæcologist is so saddening as that of cancer of the uterus. In the vast majority of the cases when first seen the only verdict to be rendered to the anxious patient is "too late" to do anything but make the last months of life as little miserable as possible. In by far the larger number, the woman does not seek advice from her ordinary medical attendant until her case is hopeless for radical cure. In too many instances, even when opportunity for examination has been given, the true nature of the case is not suspected. In my experience the worst case of this kind was that of a woman who was sent to me by her medical attendant in the hope that I might be able to cure a vesico-vaginal fistula, the result of cancer of the cervix that had extended to and perforated the vesico-vaginal septum. This neglect of uterine cancer is due more than anything else to the delusions so universal in the popular mind concerning so-called change of life, delusions which I regret to say are shared by a small, though I am pleased to say diminishing, section of the general profession. Such are the prevalent ideas, that at the age of from forty to fifty women are subject to profuse and irregular discharges of blood, and that the essential symptoms of cancer are pelvic pain and fœtid leucorrhœa. The experienced gynæcologist knows that, save in a few exceptions, menopause is not attended with menorrhagia or metrorrhagia, except when some form of organic disease exists, and that such symptoms demand prompt pelvic examination. If this be true of women who have not yet attained menopause, it

is vastly more true of those who have ceased to have discharges of any kind for months, or years, and yet I have known a number of instances of women of fifty and over, one of sixty-five, in which the appearance of a bloody discharge was welcomed, and announced with pride to her friends by the woman as a return of the distinctive characteristic of womanhood—as a renewal of youth. One woman said to her friends, "I am getting young again." In my experience the appearance of bloody discharge in a woman who has ceased to menstruate means malignant disease and nothing else in ninety-five per cent. of the cases. In the other five per cent. the source of the blood is that interesting form of vaginitis which the late Professor Hildebrandt, of Konigsberg, proposed to call "vaginitis adhesiva ulcerosa." As regards the significance of pain and fœtid discharge, I wish to say with all the authority I may command as a consultant, that while invariably present in the advanced stages, they are almost as invariably absent in the early and manageable stages, and yet it has many times been replied to me when I had announced my diagnosis, "why the woman has had no pain or ill-smelling discharge."

If there is one early symptom of cancer more suggestive, even significant I ought to say, of the early stage of cancer of the uterus, cervix or body, it is the appearance of a thin, serous, slightly turbid, sometimes pinkish at first, and for many weeks usually inodorous, discharge. This so-called "meat-water" discharge at any age ought at once to arouse suspicion in the mind of the practitioner consulted, and lead him to insist on an examination with all the authority he can command. The reason should be given if necessary, and if he is refused he should wash his hands promptly of all responsibility in the case.

Malignant disease of the body of the uterus is undoubtedly very rare as compared with similar disease of the cervix, but I have found that its frequency and the possibility of it are much underestimated by many practitioners. The symptoms in a given case have led to the suspicion of malignant disease, the patient has been examined, the cervix has been found smooth and healthy, and the uterine body normal in size and symmetrical. Then, too often, has it been concluded that there is no cause for alarm, and the fatal malady, which could only have been revealed by the dilator and curette, is allowed for a time to go on with its stealthy pace till other more prominent symptoms arise.

And now I come to another class of mistakes, very common, much less serious in their results it may be, but certainly of great

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importance from the point of view of their effects on the patient's prospects and the practitioner's reputation. I allude to an underestimate on the one hand and overestimate, more frequent perhaps, on the other hand, of the influence of disease and derangement of woman's sexual system on her symptoms and health generally. While it is true that there is scarcely an organ or function of the body which may not be disturbed reflexly or sympathetically by disease, or disturbances of function, and in many instances, even by the physiological performance of function of woman's sexual system, yet it is most necessary that in every individual case the symptoms should be studied in the light of heredity, early training, and any other influences which may have determined the type of nervous system. And for the rest, in studying a gynæcological case, the same methods should be pursued as those by which every case of disease is or should be studied, every organ and function carefully interrogated. In this way only may be avoided such grievous mistakes as removing healthy ovaries for painful menstruation, when that disorder is merely a local expression of a morbidly sensitive nervous system, inherited, or, as it may be, in many cases, acquired.

I feel that I must not conclude my discussion of this subject without an allusion to a class of mistakes which concern and influence the sexual hygiene of woman. Such are the mistakes of omission of the family doctor who fails to urge the mothers or guardians of young girls to inform those under their charge of the important matters pertaining to sexual hygiene. No girl can know by intuition the significance and importance to her health of a normal performance of the function of menstruation. How many instances have we not known of fright from the appearance of the discharge, of the use of cold water to remove it as an unclean thing, or its disregard or of its deliberate arrest, so that the pursuit of pleasure might not be interfered with. Such is undoubtedly often the result of ignorance, though many times also from wilful disregard of warnings of the consequences. In my experience there are few mothers or guardians of young girls who instruct in the necessary way those under their charge in this most important matter. This often appears to be a mere question of neglect, but I am certain it is also very often from a shame-faced aversion on the part of mothers to discuss such matters with their daughters, and so a most important source of influence and a bond of confidence between mother and daughter are never acquired. If the young girl has to learn of this matter from friends and companions

of her own age, or from mature women other than her mother, she may also learn from them other things she had better not have known.

There would doubtless have been little difficulty in further pursuing this line of thought. Suffice it to say that I have indicated mistakes the most common in my experience, and the most serious in their results, and if it be thought by some who have heard me that something is due in self-defence for the selection of such a subject as that I have chosen for this address, let it only be that it is in some measure a confession. I have included in the list, mistakes of my own, humiliating enough they have been, as well as those of others.

"THE cases I have recorded seem to show that the operation of utriculoplasty is a legitimate alternative to hysterectomy in the treatment of intractable uterine hæmorrhage due to the condition variously known as 'hæmorrhagic metritis,' 'chronic fibrotic metritis,' and other similar terms, and also that it is feasible to apply it to a uterus the seat of small multiple myomata. It would appear to be preferable to hysterectomy when the patient is still of child-bearing age, and the cervix is reasonably healthy, and especially if the patient herself objects to an enforced abolition of the menses. In the reverse of these conditions removal of the uterus is the more suitable operation—by total hysterectomy if the cervix be unhealthy, by subtotal hysterectomy in all other cases. In the event of pregnancy following utriculoplasty it would, I think, be desirable to induce the labour some weeks in advance in order to lighten the work of the uterus."—*The Lancet.*

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SANITARY MILK

By T. P. Shaw

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THE question of sanitary milk is to the Canadian people especially pertinent. Milk holds a peculiar place in the nation's dietary because of its varied applicability; containing as it does all the essentials of a perfect ration, proteids, carbohydrates, fats, inorganic salts, and water, it is capable of almost universal use. Because of this, and in addition its facility of ingestion and comparative ease of digestion, it constitutes an important food for the sick and convalescent. Of even greater importance is the use of cow's milk as a substitute for mother's milk in infant feeding.

It will be perceived that those most dependent upon this food—the sick and convalescents, the infants and children—constitute that part of the community suffering the greatest injury from the use of a food impaired in its nutritive content. This is due to the fact that they are least able to resist the harmful effects of foods contaminated by toxins or pathogenic microörgansims. While improved conditions of living have contributed to a steady decrease of general mortality in civilized countries, this, unfortunately, does not apply to the infant population under one year of age.

It is unnecessary for me to review the means by which infection may be carried by milk, or to prove that great bacterial contamination of milk is found to be coincident with a high infant mortality. In the summer of 1907 the general milk supply of Washington averaged 11,270,000 bacteria per cc. Such enormous numbers mean but little to our minds. If we make comparisons, we find that few substances contain such myriads of germ life as are often found in milk. Compared with sewage, for instance, a fluid which is popularly, and rightly, supposed to teem with germ life, it will be observed that frequently milk, when it is consumed, is richer in bacteria by far than the sewage of the large cities. An examination of one cc. of sewage of London, in 1898, gave 3,500,000 to 4,000,000. So far as numbers are concerned, however, they need not greatly alarm us, for we know that disease is due to agencies and conditions other than merely

Read before the Canadian Medical Association, 1911.

the presence of enormous numbers of bacteria. By universal consent, however, milk containing excessive numbers of bacteria is unsuitable for infant feeding.

When these facts became recognized, medical men cast about for methods to destroy the bacteria, considering it an impossibility to prevent contamination. First, boiling the milk was adopted, then pasteurization, then again the introduction of antiseptics, and quite recently the sterilization by the ultra-violet rays and "hyper ultra-violet" rays has been experimented with. Of these several methods, pateurization is the one most generally used to-day. It is so difficult to obtain clean, fresh milk in a large city that it is necessary to destroy the danger which so frequently lurks in raw milk; pateurization is a cheap and efficient method of accomplishing this result. It has disadvantages, but the fact that it saves many lives and prevents much sickness far outweighs the disadvantages.

One of the chief objections to pasteurization is that it promotes carelessness and discourages the efforts to produce clean milk; it will cause the farmers and those who handle the milk to believe that it is unnecessary to be quite so particular as the dirt that gets into the milk is going to be cooked and made harmless. But pasteurization should not take the place of inspection and improved dairy methods. Pasteurization of all the milk in the community is not desirable, but the general public should be protected against the old, dirty, and uncared for milk which forms the bulk of the supply of large cities. On the other hand, when it is necessary to feed infants artificially, we must obtain *fresh, pure milk.*

In the year 1908 the writer in conjunction with a milk dealer began an experiment with a view to determining whether it was possible to obtain a supply of fresh milk for infant feeding containing less than 10,000 bacteria to the cc. The method followed was as follows: Several cows were set apart, and these animals were given special care as to cleanliness; the skin kept clean with frequent brushing, all long hair clipped from tail and under side of body, bedded on shavings, no manure allowed to collect at back of stalls, and precaution was taken to avoid raising dust in the stable at milking time. At the time of milking, the udder was carefully washed, after which the milker washed his hands with soap and warm water. The milkers were clad in a short coat, and a divided apron, which was fastened about the legs. This form of dress was considered better, because the long coat drags upon the stable floor when the milker sits down to milk, and soon becomes

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soiled. A special bucket was used with a narrow opening covered with two layers of gauze. This first bucket was placed in a larger bucket containing ice water to facilitate the cooling of the milk.

After milking a cow, the milker carried the milk out of the barn immediately, and poured it through a strainer, on top of which were placed several layers of gauze, into a large pan. This can was also standing in ice water. After the several cows were milked, and the milk mixed and cooled in this can, it was poured into bottles for delivery. These bottles were standing, cleaned and sterilized, in hollow troughs surrounded by ice water, a clean paper cap was placed upon the bottle and sealed with paraffin.

By this method the milk was cooled rapidly to a temperature of 40°F. and it was kept at this temperature until delivery. Now, what was the result? Before starting the experiment the bacteria count ran 100,000 per cc. and over. The first day of the experiment the milk delivered at my house gave a bacterial count of 12,000 per cc.

A chart was exhibited to show the ups and downs of this experiment for the twelve months following.

One sees clearly from this chart that neglect, upon the part of the men in charge, of some slight detail in the technic resulted in a rise of the bacterial count. Without wearying you further with lists of figures, I may say that the average count for six months of 1911 was 6,000 bacteria per cc. and a count made during the hot spell in May ran as low as 4,000.

I think this clearly shows that by protecting the milk against contamination at the source of supply and by rapid cooling, the development of bacteria therein is prevented, and clean, fresh milk can be obtained.

In closing I should like to make the following suggestions: All cities should establish bacterial standards as well as chemical standards for their milk supply. All milk should be sold in bottles. Pasteurized milk is to be preferred to dirty un-pasteurized milk, but it should be stamped as pasteurized and bear the date of pasteurization. Clean, fresh milk can be produced, and men who are willing to go to the trouble and expense of producing it, should be given every assistance and encouragement. The medical profession can do a great deal by educating the public to demand clean, fresh milk, and make them willing to pay a few cents more per quart for such a product.

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AN EXPERIMENTAL STUDY OF THE PHAGOCYTIC IMMUNITY PRODUCED BY TUBERCULIN

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THE problem of immunity to tuberculosis has always been, and still is, one of greatest interest to the medical world. It would be impossible in this paper to review in detail the many achievements which have already been accomplished, and at the same time do credit to them. It may be said that the problem of tuberculous immunity has been approached chiefly from the standpoint of artificial immunity. This has been divided into three main divisions: that produced by attenuated living organisms, by bacillary emulsions, and by toxines.

In 1889 Dixon made experiments with attenuated organisms, to be followed by Trudeau and de Schweinitz. In 1895, when Theobald Smith discovered the difference between the human and the bovine bacillus of tuberculosis, Pearson and Gilliland, von Behring and Koch, Baumgarten, Calumette and Guerin, and Heymanns successively, and by different methods, immunized cattle to the bovine bacilli by the use of human living cultures.

The use of Koch's original tuberculin had utterly failed to produce immunity in animals, but the bacillary emulsions had been slightly more successful. But it may be said that the only reliable results obtained were by the use of the living attenuated bacilli. One of the great obstacles to the study of tuberculous immunity has been the difficulty of watching, from time to time, the increase in this immunity. The only reliable means has been the injection of virulent organisms after the process of immunization had been completed in a series of animals. Then, by per-

Read before the Canadian Medical Association, Montreal, June 7th, 1911.

The work contained in this paper was commenced in the Pathological Laboratory of the Presbyterian Hospital, New York City, and was completed in the Laboratory of Experimental Medicine, McGill University, Montreal.

forming autopsies from time to time, the degree of immunity was determined by the extent of the tuberculous process, and the length of life of the immunized animals as compared to controls. The results of such experiments were very instructive, but gave only the degree of cellular reaction. It was desirable that the serum reactions should be studied during the course of the immunization. For this purpose the agglutinins were estimated, but with little or no success. When Wright discovered opsonins and applied the method of Leischman for estimating the phagocytic power of the serum, much was looked for in the elucidation of tuberculous immunity, but the results were sadly disappointing. Not so much that there were no changes in the phagocytic power of the serum as that the methods were too inaccurate, and did not give sufficient scope to changes that might occur.

In a previous communication I have used and explained the method of determining the phagocytic power of the serum as devised by Neufeld and Hune, and Klien. By dilution of the blood serum, so successfully employed in the quantitative estimation of the bactericidal and agglutinative powers, Neufeld and Hune first demonstrated a power to promote phagocytosis quantitatively comparable with the other properties of immune serum. They found that, by progressive dilutions, a point could be reached where the opsonins disappear. I shall briefly outline the procedure of Klien.

The blood serum is collected in the usual manner, both from the patient or animal infected, and from a normal individual of the same species. The leucocytes are collected as in Wright's work, and a suitable emulsion of the infecting organism is prepared. The blood serum is then diluted to various strengths, which may reach one part in one thousand, or higher if necessary. Then capillary pipettes are prepared, as described by Lieschmann, and equal parts of diluted serum, leucocytes, and bacteria are mixed and incubated at 37°C. for a definite length of time, varying with the organism used. At the end of this period smears are made and suitably stained. In addition to the pipettes containing immune and normal serum, one is prepared substituting 0·85 per cent. salt solution for the serum and treated as described above. The average number of bacteria per leucocyte in the preparation with salt solution is taken as the degree of spontaneous phagocytosis. The preparation made with the most diluted serum, which shows approximately this number, is taken as the point where opsonins have ceased to be active. If, for example, the preparation with salt solution shows a phagocytic average of 0·5 bacteria per leucocyte,

and all the dilutions of serum up to 1 in 600 materially exceed this figure, then the phagocytic power is taken as 1 in 600, or as 600, which shall be the manner of designation in the following experiments. The dilution of 1 in 600 is obtained from a dilution of 1 in 200 of serum and mixing together equal parts of diluted serum, leucocytic emulsion, and bacterial emulsion, so that the serum is again diluted threefold, a final dilution of 1 in 600 being obtained.

The results obtained with the serum of a rabbit immunized to tubercle bacilli are cited for example:

Dilution.	Bacteria per Leucocyte with Serum of Normal Rabbit.	Bacteria per Leucocyte with Serum of Immune Rabbit.
1-3	7·	8·
1-30	·29	9·
1-150	·4	6·
1-300	·43	1·6
1-600	·5	·35
1-1200	·2	·4

Salt solution -0·45 bacteria per leucocyte.

In this case the ordinary opsonic index would have been 1·1. With the method of dilution, the opsonic power of the normal serum practically ceased below a dilution of 1 in 30, while the phagocytosis, with the immune rabbit's serum, did not equal that with salt solution until a dilution of 1 in 300 at least was reached, that is more than ten times the normal.

In my previous work I immunized a rabbit to an attenuated living human bacillus of tuberculosis and followed the phagocytic power of the serum. I will here recount that experiment so as to make more complete the experiments following. The same technic has been used in all.

Through the Rockefeller Institute for Medical Research I obtained a strain of tubercle bacilli, attenuated by Dr. Trudeau, which even in large doses was not fatal to rabbits, and the animals recovered, although they showed for a short time signs of infection. The animals were subsequently inoculated with a second strain of greater virulence in order that the immunity produced by the attenuated culture might be tested.

The emulsion of tubercle bacilli employed for the estimation of the opsonic power was killed by exposure to direct sunlight for twenty-four hours, and then ground up in a small test-tube with a glass rod under aseptic precautions, as described by Sellards and Jeans. In this manner a very satisfactory emulsion was obtained; it was free from clumps, and fragmentation of the bacilli was very

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slight. The preparations were incubated for fifteen minutes; the smears were stained in carbol-fuchsin at 37°C. for twelve hours, decolourized in 95 per cent. alcohol for ten minutes, and counterstained with Lœffler's methylene blue for five minutes. This method stained the leucocytes very distinctly and gave them a clear outline; there was little of the destruction which occurs when greater heat or when acids are employed. One hundred leucocytes were counted in each slide.

On August 9th, 1908, a rabbit received into the ear vein 2 cc. of an emulsion of non-virulent tubercle bacilli. The emulsion was opaque and was freed from clumps by grinding the bacilli very carefully and then centrifugizing the emulsion until the supernatant fluid was cloudy but contained no visible particles. The opsonic power was estimated as described above and controlled with normal salt solution (Chart I). Normal sera always showed an absence of phagocytosis at 30, in fact its strength may have been much less, as dilutions between 3 and 30 were not made.

In the treated rabbit the opsonic power decreased below normal for a week after inoculation, but suddenly began to increase, and this increase steadily progressed until a power of 1500 was reached forty-four days after the original inoculation. There was then a slight drop, and the animal was again inoculated on October 3rd, 1908, fifty-three days after the first injection.

On this occasion an emulsion of the virulent culture was prepared by the method described above, and the intravenous method was used for inoculation. The opsonic power continued to fall slightly, but eleven days after the second inoculation it had regained its high point of 1500.

During the period of observation, the animal was frequently weighed, and the curve of weight closely followed the opsonic curve; at first there was a sudden loss of weight followed by a slow recovery until the original weight was exceeded. After the second inoculation there was no drop in weight corresponding to that following the first injection. The drop in the phagocytic power after each inoculation was most likely due to the demand for a greater quantity of protective bodies than the body was capable of providing, so that the amount present in the serum was temporarily reduced; but the animal was in such good condition that the loss was soon replaced. That this drop in the opsonins may have been the "negative phase" described by Wright, is probable. The animal used in this experiment continued in good health, and on November 10th, 1910, was killed with chloroform and the organs examined. They were

at this time entirely free from tuberculosis, as is seen in Photograph I, and the only results evident of the infection are a few scars on the pleura and cortex of the kidneys.

In view of the success of determining the phagocytic power in the immunity produced by attenuated living bacilli, it was deemed advisable to investigate the phagocytic immunity produced by the injection of killed organisms. At the same time experiments were carried on to determine what influence the injection of tuberculous toxines or "old tuberculin" had on the phagocytic power of the serum.

The technic employed was identical to that in the first experiment. The organism employed, however, was not the human bacillus of tuberculosis, but the bovine, as this is more virulent for rabbits, and for this reason I thought any results obtained might be of more value.

Thirty milligrams of dried bovine bacilli were emulsified in thirty cubic centimetres of 20 per cent. sterile glycerine physiological salt solution. These were exposed to direct sunlight for twenty-four hours, when one cubic centimetre was injected into each of three guinea-pigs. After six weeks these animals were killed with chloroform, but no evidence of tuberculosis was found. I thus assumed the emulsion to be sterile.

A young and apparently healthy rabbit was selected, and one cubic centimetre of the glycerine emulsion of tubercle bacilli was injected subcutaneously every seven days. The phagocytic power of the animal was determined at intervals as shown in Chart II.

It will be seen from this that the phagocytic power slowly increased, as compared with a normal rabbit of the same age and size, until a phagocytic power of 1400 was obtained, which was about fifty times greater than the control. By comparing Chart I with the solid black line in Chart II, we see that the phagocytic power of the serum of these rabbits reached practically the same height. The rabbit injected with one dose of attenuated living organisms developed a phagocytic immunity of 1500 in forty-four days, while the rabbit immunized with the bacillary emulsion, given in twenty-seven one cubic centimetre doses, took one hundred and seventy-two days to develop an immunity of 1400. It remained now to determine whether this degree of phagocytic immunity was indicative of any real protection on the part of the animal to virulent, living, bovine bacilli.

On September 1st, 1909, this rabbit and the control rabbit were injected intravenously with one-half a milligram by weight of

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the virulent, bovine bacillus. The immunized animal showed slight signs of distress, especially some dyspnœa lasting for about a week, with loss of weight and fever. These signs, however, soon disappeared, and the animal remained in good health until November 10th, 1910, or fourteen months after the inoculation of the virulent bacilli. At this date the animal was killed with chloroform, and an autopsy performed. No macroscopical evidences of tuberculosis were found, as is seen in Photograph II. Sections were likewise free of any tuberculous lesions.

The control animal, however, within a few days of the injection of the virulent organisms, began to show signs of distress. It rapidly lost weight and died on October 30th, 1909. An autopsy showed advanced caseous tuberculosis of the lungs, as seen in Photograph III. The other organs were free except the kidneys, which showed a number of small tubercles. Besides this there was an advanced mixed nephritis which will be discussed later.

Simultaneously with the second experiment, a rabbit of the same age and size was injected with old tuberculin prepared from the same bovine culture as used in the previous experiment. The tuberculin was prepared after the original method of Koch, and one cubic centimetre was injected every seven days, over the same period as before. The failure of old tuberculin in the hands of other workers to produce even a slight relative immunity to virulent organisms was not encouraging that immunity would be produced in this experiment. But it was expected that, if any immunity, however small, were developed, it might be demonstrated by the increase of the phagocytic power of the serum. With this point in view the phagocytic power was determined at intervals, as in the previous experiments.

The failure of the inoculations of old tuberculin to produce any increase in the phagocytic power is graphically illustrated by the interrupted line in Chart II. The phagocytic power at no time was appreciably greater than that of the normal rabbit. The conclusion was drawn, therefore, that this rabbit had not developed any protection against the living organism. In order that this might be proven, one-half milligram by weight of the bovine bacillus was injected on September 1st, 1909, as in rabbit two. The result was in no way different from the control rabbit injected at the same time with the same organism. It became very ill and died on October 26th, 1909, seven weeks after the injection of the virulent organism. The autopsy showed exactly the same condition as in the control. The lungs were the site of advanced caseous tubercu-

losis, while the kidneys showed a number of small tubercles, as shown in Photograph IV. A chronic mixed nephritis was also found.

The cause of the nephritis in the rabbit immunized to old tuberculin and the control rabbit was not determined. The occurrence of this condition in the two rabbits which died of infection was a peculiar coincidence. That it was not due to the infection by the tubercle bacilli is inferred, as there is no evidence of an acute process, except around the few tubercles found. A chronic nephritis has been frequently observed in rabbits which died of other causes. Therefore, the most obvious conclusion is that this condition was a pure coincidence.

The immunity produced by the injection of the attenuated, living, human bacillus and the killed bovine bacillus was absolute, in so far as a lethal dose of virulent tubercle bacilli was concerned. It is not possible to state that this immunity was altogether due to the increase in the phagocytic power of the blood. However, as I have shown in a previous article, the phagocytic power of the serum gives a fairly accurate index of the resistance of an animal to bacterial infections. The injections of "old tuberculin" did not result in any immunity that could be estimated by the phagocytic power of the blood, or by the use of virulent tubercle bacilli.

From these facts the question presents itself as to how they might be applied to the problem of human tuberculosis. For such a protective inoculation to be applicable, the person vaccinated must be free from tuberculosis. As this is a rare occurrence in adults, suitable subjects must be looked for in those young enough to have escaped infection. It is claimed by many workers that tuberculous infection occurs in the large percentage of cases during the early years of childhood, therefore, it would be before this period that the best results and greatest benefit of protective inoculation would be obtained. Naturally the success of such an undertaking would depend upon the production of a high degree of phagocytic immunity, as this is the only method by which the resistance of the animal organism to virulent tubercle bacilli can be estimated. At the present time, experiments are being contemplated to establish what effect the injection of killed tubercle bacilli, over a long period of time, has on the phagocytic power of the human organism.

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Conclusions

First:—The inoculation of the rabbit with attenuated, living, tubercle bacilli rapidly produces an immunity to lethal doses of virulent, tubercle bacilli.

Second:—The inoculation of the rabbit with killed, tubercle bacilli in sufficient amounts over a long enough period, produces an active immunity to virulent, tubercle bacilli.

Third:—The estimation of the phagocytic power of the serum affords a fairly accurate estimate of the immunity possessed by the animal immunized.

Fourth:—The injections into the rabbit of tuberculous toxine or "old tuberculin" does not produce any increase of the phagocytic power of the serum, nor does it produce any appreciable immunity to virulent, tubercle bacilli.

Fifth:—The fact that the injection into the rabbit of killed, tubercle bacilli produces an immunity to virulent, tubercle bacilli might be taken advantage of to produce an immunity in infants before they become primarily infected with tuberculosis.

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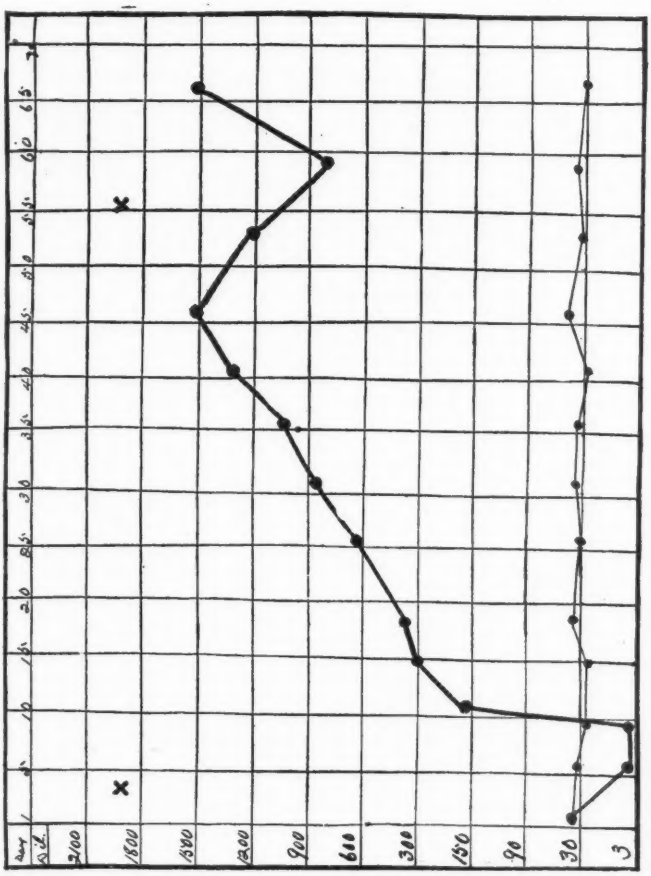
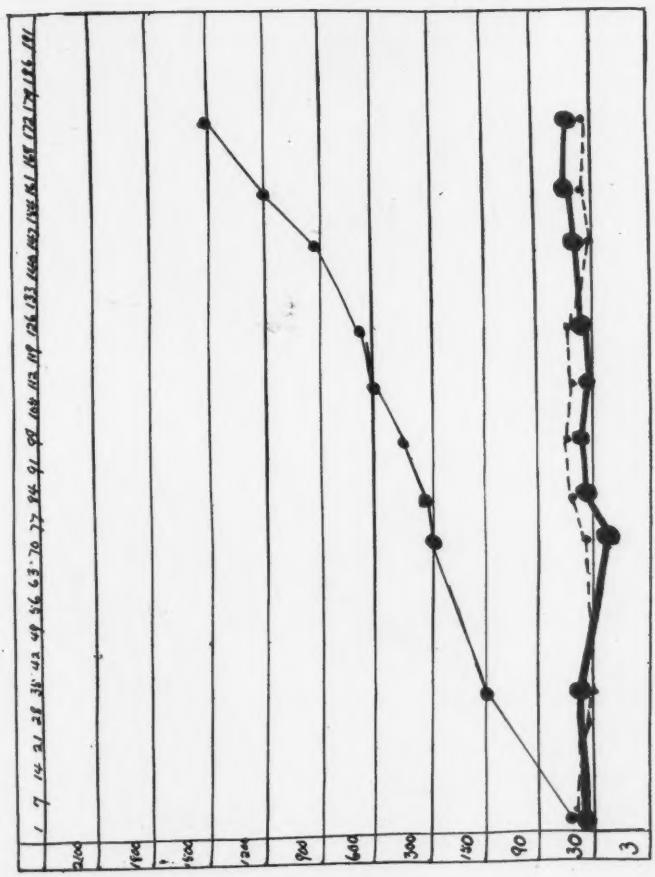
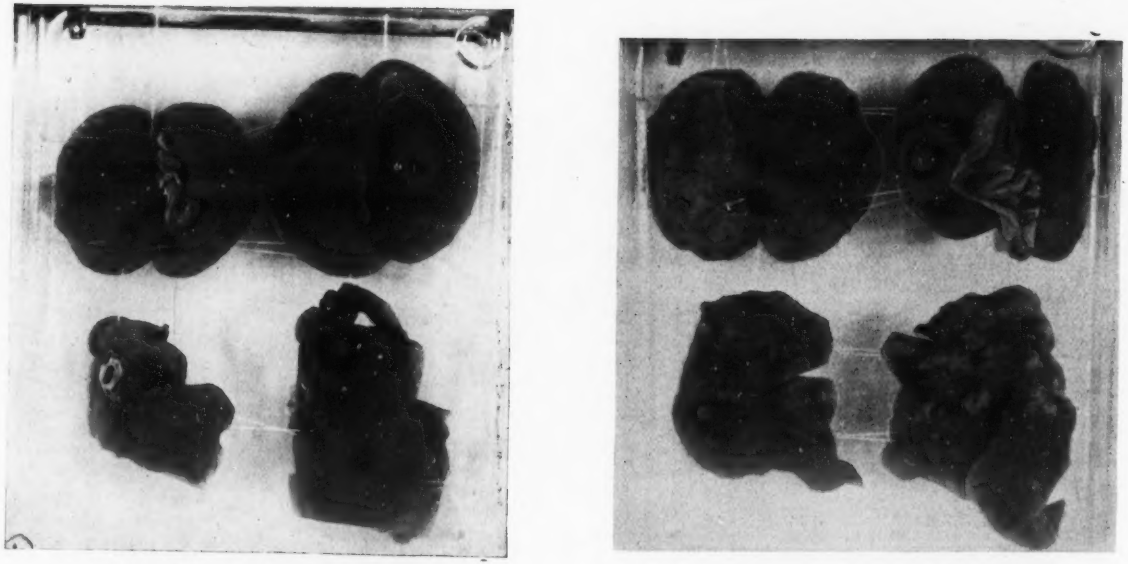


CHART I *Bacillus tuberculosis*. X, X = inoculation.



Opsonins of rabbit immunized, to Bacillen Emulsion ●——● to "Old Tuberculin" ●——● of Normal Rabbit ●- - -● Inoculation made every seven days.

CHART II



No. I No. II No. III No. IV

EXPLANATION OF PHOTOGRAPHS

No. I.—Shows a kidney and a lung from a rabbit immunized with an avirulent, living, tubercle bacilli, fourteen months after receiving a lethal dose of living, virulent, tubercle bacilli.

No. II.—Shows a kidney and a lung from a rabbit injected weekly with an emulsion of killed tubercle bacilli fourteen months after receiving a lethal dose of living, virulent, tubercle bacilli.

No. III.—Shows a kidney and a lung of a control rabbit. Death occurred sixty days after the animal received a lethal dose of virulent, tubercle bacilli.

No. IV.—Shows a kidney and a lung from a rabbit injected weekly with "old tuberculin." Death occurred fifty-six days after the animal received a lethal dose of virulent, tubercle bacilli.

PRIMARY PYELITIS IN INFANTS

By J. T. Fotheringham, M.D.

DR. G. F. Still in that delightful volume recently issued, "Common Disorders and Diseases of Childhood," has as one of his most illuminating and interesting chapters one entitled "Fever of Obscure Causation." Some of you, at any rate, will remember that, after discussing the bearing of the child's well-known nervous instability upon the occurrence of such fever, he mentions four or five of the ordinary causes apt to be latent or so obscure as to escape ordinary observation. He points, out as examples of the nervous instability of childhood, the tendency to convulsions upon provocation altogether insufficient to produce them later in life, and the irregularity of many functions, such as the secretion of urine, disturbed rhythm of the diaphragm with hiccough; the irregularity of the infant's respiration and sometimes of the rate, and even of the rhythm, of the heart; the normal tendency to stammering seen *in posse* in all children, as they acquire speech, and even the spasm of the pylorus with incoördination of gastric movements. After making due allowance for such phenomena, there are still fevers of obscure causation appearing either as prolonged, slight fever or as recurring fever. By about the age of ten, the nervous control of these functions has become somewhat stereotyped and the child begins to approach the level of stability which will probably characterize its adult life.

One of the most frequent causes of obscure fever is probably gastro-intestinal disturbance,—a little indigestible food, a mass of hard fæces in the colon, or possibly sub-acute appendicitis of a relapsing type. Another, of course, is latent tuberculosis, especially of the mesenteric or bronchial glands; latent rheumatism too, particularly if it be affecting, mainly, the heart and so causing little complaint of pain; affections of the upper air passages, such as adenoids, infected tonsils, or latent otitis-media; even dentition, especially if accompanied by pale stool and moderate constipation, may suffice in a child of neurotic tendency to cause the disturbance of temperature referred to. But of the causes discussed by Still

Read before the Academy of Medicine, Toronto, October 5th, 1911.

the most interesting, perhaps, is that which I have selected to bring to your attention this evening, Primary Pyelitis in Infants.

It seems odd, at first sight, that an affection so distinctive should have so long escaped recognition as a clinical entity, until one recalls the difficulty with which, in such young patients, the urine is to be obtained for examination. Attention was first called to it, it is said, by Escherich in 1894, under the title "coli-cystitis," and in the same year Emmett Holt reported three similar cases, calling them acute pyelitis. Finkelstein, Baginsky, Emmett Holt, and Thomson have perhaps had most to do with securing the proper attention of the profession to the condition and clearing up its clinical course and morbid anatomy. My selection of this subject, however, was through the occurrence of a case in practice this summer, the details of which are as follows:

R., female, aged fourteen months, had early in June a mild attack of gastro-intestinal disturbance, from which she recovered apparently completely. There was some nondescript ill health, not marked by digestive disturbance, and attributed by the father, who is a medical man, mainly to the very hot weather of the first week of July during which the weather temperature reached 103°, and the child was kept alive by being kept in the cellar, suffering apparently from heat collapse. There was, however, no acute fever, and the mother, on August 3rd, went to Muskoka. On August 23rd, she returned, because the child had had several recurrences of very high temperature with acute general disturbance and very marked and progressive anæmia, but no digestive or diarrhœal disturbance. The urine was noted, at about this time, to be of a very offensive odour. After a day or two of prostration, apparently from the high fever and increasing anæmia, the child would rally and go on with normal or nearly normal temperature, only to repeat the process in a few days. Careful examination excluded other visceral disease.

The urine was obtained and found to be acid, loaded with pus, and looking, as other cases have been described, like a bouillon culture, and swarming with a rod-shaped bacillus morphologically identical with the colon bacillus. The fact that the child was not in hospital prevented the carrying out of the proper technic with regard to both urine and blood examinations, but, in so far as they could be carried out, culture identified it also as a colon bacillus. On September 28th, the following report is made, convalescence being apparently finally established.

Urine; acid; no albumen, no sugar, few pus cells, epithelial cells, urates, bacteria.

Culture, mixed, long fine bacillus with B. coli communis, gram negative; fewer, gram-negative short bacilli, rounded ends (B. coli).

Agar—Diffuse growth, large white colonies.

Broth—Heavy growth and ppt. fæcal odour.

Litmus Milk—Acidity, coagulation, digestion.

Glucose Agar—Few gas bubbles.

Contamination by streptococci could not be excluded. There was no chill at any stage of the illness, no evidence of cystitis, such as painful or frequent micturition. The diagnosis was made by exclusion of other visceral or infective conditions, with such facts as the age, the sex, the type of severe, recurring fever with prostration and severe general disturbance at each recurrence, and the rapid and severe type of anæmia with comparatively little loss of weight, such as would accompany a digestive disturbance. Furthermore, the simple treatment recommended by Thomson, plenty of fluids with four to six grain doses of citrate of potash every four hours, soon put a stop to the fever and other systemic trouble, and caused a rapid disappearance of the pus, though not as yet of the bacilli, which, the authorities state, are slow to disappear and frequently cause relapse if the urine be not kept alkaline for a fortnight or longer. The urine at no time contained any evidence of renal mischief, albumen being present only in traces, with no casts or blood. The case would therefore appear to be an uncomplicated inflammation of the pelvis of the kidney due to infection by the organism named.

Thomson's classification of the cases set forth in his paper in the *Quarterly Journal of Medicine* for April, 1910, though it has been criticized in an American article as too complicated, may perhaps be accepted as our standard. It is as follows:

1. Simple bacilluria in which an acid urine, with or without offensive smell, is found to contain no pus but large numbers of bacilli. There are, of course, no subjective symptoms excepting possibly an unexpected bed wetting or an increased frequency of urination.

2. Not very frequently, cystitis in which, with no rise of temperature or general illness or distress, there is acid urine with numerous pus cells and bacilli, with some bladder epithelium, and dysuria.

3. Most frequent of all, pyelitis, acute and primary, with urine as above described but severe constitutional distress, high remitting temperature; in many cases what is unusual in so young a patient, one or more rigours, cyanosis, sometimes even convulsions, sweats,

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sepsis and a strikingly rapid anæmia. The blood shows constantly a marked leucocytosis, frequently above 30,000. The child is usually in great distress and evidently pained by being handled, especially about the abdomen; coma, or at least somnolence, may be present early in the acute seizure.

4. Suppurative nephritis, happily rare. From the pelvis, the bacilli spread by continuity of tissue through the denuded mucosa into the substance of both pyramids and cortex, multiple miliary and larger abscesses form, from which the B. coli has been by various observers grown in pure culture, and the child usually dies in extreme exhaustion within a few days. Fortunately this type of case is apparently very rare.

Of the four groups outlined, my case is evidently in the largest; namely, the third, simple pyelitis.

One of the first questions to arise is that of the mode of ingress of the infection. Three channels are suggested; direct infection of the bladder, particularly easy in the female, from the anus via the urethra, with an ascending infection of the pelvis by way of the ureter. Second, a systemic blood-borne infection, and third, apparently too much of a refinement for ready acceptance, a direct infection through the bladder from a diseased colon. This suggestion is made to explain the occurrence of the disease in boys, in whom, of course, infection by the urethra is much less easy than in girl babies. It was taught by Klebs, before 1884, that the infection from the bladder can and sometimes does ascend by the lymphatics of the ureter and kidney. This would seem to be a theory devised because it was thought to be easier of acceptance than that the infection should climb the ureter against the down-flow of the urine. But débris and B. coli in masses have been found post mortem in the ureters, though, to be sure, in the late stages they have probably come there from the pelvis above. The theory of infection from the stools direct, through the urethra, is the one generally accepted, for the following, among other reasons. A very great preponderance of the cases are female. Of one hundred and twenty-six cases which I have collected from the lists of seven observers, no less than one hundred and eleven are girls, although Lovett Morse recently published a list of fifty cases in which twenty were boys. Again, if the infection were blood borne, it would not only be found to be more frequently due to staphylococci and streptococci, but it would affect both kidneys with much more certainty, whereas pyelitis is not infrequently found to be confined to one kidney, as if the infection had ascended by one ureter only, the bladder more often

than not escaping; further, the acid urine forms a much better culture medium for the organisms than the alkaline blood and tissues. Box states that in eighty-eight cases at the Great Ormond St. Hospital for children in six years, B. coli were found to be the only infecting organism in fifty-six; in ten others it was combined with staphylococcus or streptococcus; in twelve cases staphylococcus only was obtained; five cases, B. proteus vulgaris; in three cases, streptococcus; two cases Gætner's B. enteritidis.

Among predisposing causes, great weight should be given to previous depressed health, not necessarily of digestive origin, as shown by the fact that the season of greatest frequency does not coincide with that for the diarrhœal disturbances of infants. Friedenwald of Baltimore states that of eighty cases placed at his disposal by Professor Finkelstein from a large Foundling Hospital in Berlin, there were fifty-four cases between December 1st and June 1st. The months of May, February, and March having, respectively, thirteen, eleven, and ten cases; June, none, and October and November each three. I may say incidentally that these cases were fifty-eight females and twenty-two males. It would seem then that influenza, or some acute nutritional disorder, or acute infection of the respiratory apparatus, or otitis media, occur much more frequently as predisposing causes than diarrhœal disorder. Thomson has noted it as following scurvy; he also mentions influenza; but adds that eleven of his series of twenty-five were said by their mothers to be in good health when the attack began. He suggests that sometimes the predisposing cause may be of the nature of a chill, or possibly some chemical change in the urine may have occurred. At any rate, if there be a predisposing cause, it may have "so weakened the natural defences of the urinary tract as to make it liable to be infected by its normal neighbour the bacillus coli."

As to age, the disease is much commoner before than after two years, and the symptoms are usually more severe and typical in young infants than in older children.

Diagnosis. The two conditions probably most likely to be mistaken for this are typhoid fever and meningitis. With regard to the former; apart from the rarity of its occurrence in infants so young, the type of temperature, the remissions, the non-occurrence of spots and splenic enlargement, and the absence of abdominal symptoms such as diarrhœa and distention, the frequent improvements and recrudescences, taken together with the white cell count and the results of blood culture, should usually suffice to exclude typhoid.

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The presence of pus in the urine should at once direct one's attention to pyelitis as the cause of the fever, though the difficulty of obtaining urine from children so young, especially outside of hospital, constitutes probably the real reason for the backwardness of the profession, as a whole, in recognizing the disease. The occurrence of a chill in so young a child, while not a constant feature of pyelitis, occurs very much more frequently in this than in any other disorder. In acute disorders like meningitis, pneumonia, and other inflammatory diseases, we all know the equivalent of the chill in the older patient, is in babies usually either a convulsion, or somnolence, or vomiting. Thomson states that the frequency of rigours in these cases is interesting and at times may help in diagnosis, and adds that he has never seen a baby under two years who was described as having a chill, who had not pus in the urine.

Meningitis it should be possible to exclude by careful consideration of the family history as regards tubercle; by the state of the reflexes; the more gradual onset; the character of the temperature curve; the white cell count; and probably the sex of the child and the skin reaction to tuberculin; besides all which the result of treatment directed to the correction of the pyuria is so prompt that it soon makes the diagnosis clear.

There are few acute disorders of infancy in which results are so brilliant, once the diagnosis is made. General measures, such as hot baths for muscular pain, nervous disturbance, prostration and high temperature, along with judicious feeding, and attention to the bowels, are all that the child requires. For the infection in the kidneys, two requirements exist, abundance of fluid by mouth or by rectum, that the quantity of urine may be increased and its acidity reduced; and second, a simple alkali, the best being citrate of potash, in doses varying from twenty-four to one hundred and eighty grains in twenty-four hours. Within four days, and often earlier, and rarely, if ever, later than seven days, the constitutional symptoms all disappear and the urine clears up, though a relapse will probably occur, on account of the persistence of the bacilli, if the alkaline treatment be not persisted in for at least two weeks. This point can be decided by examination of the urine. The German authorities seem to favour active urinary disinfectants, urotropin and salol being in high repute with them. Results apparently may be, in some cases, attained by these agents if the alkaline treatment fails to produce early and complete cure, but both Thomson and Still insist that the antiseptics are comparatively inefficient

and the potash salt usually effective. It seems to be best given in milk or milk and water. Cases in which the alkaline treatment fails are probably those in which the infection has invaded the kidney substance and multiple miliary abscesses exist with casts and other renal débris in the urine, and with no improvement in the severe constitutional disturbance, which usually ends fatally within a few days. One point to be noted is that if the potash salt, or anything else, causes diarrhœa, the urine is apt to remain acid, and the symptoms accordingly to persist, on account of the concentration of the urine from excretion by water of the other channel. If thought wise, iron in one of its simpler organic forms may be used for the anæmia when the fever has subsided and the appetite returned, though good food in sufficient quantity is likely to very promptly restore the blood to a normal condition.

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"ILLINOIS has just passed a bill abolishing the use of the public drinking-cup. Chicago, through its health department, supported by the newspapers, has waged an active campaign against it. The city bacteriologists have collected drinking-cups from various school buildings, hotels, railway stations, and stores in the city of Chicago, and have made microscopic examinations and bacterial cultures from these cups. The most frequent varieties of germs found are various pus germs, also, specimens of pneumonia and diphtheria bacilli have been found. Guinea-pigs have been inoculated with these cultures, and the results of these tests, according to the city bacteriologists, prove the deadly nature of these bacteria. All the pigs inoculated with the bacteria of the pus infections developed fatal abscesses. The tests with the diptheria culture were also positive, as proved by the occurrence of the disease."—*The Journal of the American Medical Association*.

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MOULDS IN THE ALIMENTARY CANAL

By I. Proctor Hall, Vancouver

THERE is found occasionally in the stomach a greenish-yellow fluid resembling bile, but having very little taste and giving no reaction for bile salts. Sometimes there are in this fluid deep green, semi-solid masses, resembling pond scum. The fluid contains floating filaments, cells, and spores of low orders of plants, of which the most constant are green moulds. More rarely I have found brick-red masses of rounded cells, under similar clinical conditions.

The green mould grows moderately well in various culture media, especially in milk. Tests of its viability were made by adding to portions in test-tubes the following:

(1) Hydrochloric acid, which seemed to favour its growth. (2) Sodium chlorid, which made no change. (3) Zinc and sodium sulfocarbolates, which made no change. (4) Lysol, which killed all but the spores. (5) Sodium bicarbonate, which killed everything.

Clinical tests show that bismuth subnitrate has no effect. The mould develops in an acid but not in an alkaline medium.

The characteristic symptoms accompanying the presence of the green mould may be understood from some brief reports of cases.

Case 1. Timber cruiser, aged forty-two, had occasional digestive troubles for two years, then a rather sudden attack characterized by nausea, frequent vomiting of muddy green fluid, diarrhœa with green discharges, prostration, and emaciation. This had continued for three weeks when I saw him. His temperature was then subnormal, skin a dirty brown, tongue coated, abdomen hollow, pulse weak. Vomiting occurred every half to one hour. The treatment, gastric and colonic lavage twice daily with a solution of lysol (one-tenth of one per cent.), gave immediate relief. Improvement was rapid. In ten days all evidence of mould had disappeared. Treatment was continued a few days longer, then ceased. The patient was walking about for a week. Suddenly the vomiting returned and the green mould was as abundant as ever, a quart of deep green fluid coming from the stomach at one time. Prostration was very marked. At this time I made the viability tests already mentioned, and resumed the treatment, alternating the lysol with

sodium bicarbonate. In ten days more the patient was discharged with instructions to continue the treatment for a month at home. There has been no return of his trouble for three years.

I suppose that the first course of treatment killed the mould but left living spores, which in a few days developed and started a second crop, causing the relapse.

CASE 2. Boy of fourteen, had weak digestion for some years. A "bilious attack," characterized by green vomit, green stools, prostration, and violent headaches, had continued for two weeks when I saw him. His tongue was coated, anæmia pronounced, skin white, and the pulse so weak that I was afraid to begin gastric lavage at once—a groundless fear, since the distress of lavage is less than the distress of vomiting. A level teaspoonful of sodium bicarbonate an hour before each meal, gastric and colonic lavage once daily, and tonics as needed, were continued for a month. Recovery was uneventful. In both these cases there was marked gastric atony, which was treated by Turck's air massage.

CASE 3. A girl of five years and her sister, aged seven, suffered from slight indigestion and disturbed sleep for some weeks. A distinct white ring around the mouth pointed to alimentary irritation. Suspecting worms, I gave santonine and calomel, but with no improvement. After three weeks the younger girl began to vomit green mould, her temperature rose to 103° F., she was constipated and very weak. The treatment was calomel in small doses, a level teaspoonful of sodium bicarbonate an hour before each meal, and colonic lavage. Improvement began at once, and in a week she was well. Thinking, from the similarity of symptoms, that the older sister had the same trouble in milder form, I gave her soda for two days, after which she appeared to be entirely well.

CASE 4. A baby four months old, bottle fed, was for two days unable to retain food, and had a mild diarrhœa with no greenness. Prostration was great, insomnia marked. The food was changed, and some retained, but the mild diarrhœa continued and prostration increased. On the fourth day some mother's milk was given and retained, but that night the baby died. I concluded afterwards that this was an unrecognized case of green mould.

CASE 5. A girl of fourteen, intensely nervous, has had for six months slight constipation, lassitude, and loss of appetite. Ordinary treatment had given no relief. I found adenoids and enlarged tonsils, and indurated gland below each clavicle, and great tenderness over the subclavicular regions. The umbilical region was tympanitic, the abdomen otherwise normal. The temperature was 99·8°

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F., the lungs normal, though the general condition suggested tuberculosis. The colon was full of dull green fæces. The treatment ordered was colonic lavage, soda and calomel. Improvement began at once. Later the adenoids and parts of the tonsils were removed. She is now almost well.

From these cases it will be seen that some digestive disturbances and the marks of strong toxic action are the only clear symptoms, apart from the discovery of the mould itself. In every case of sudden or gradually increasing weakness, with toxic symptoms, for which no sufficient cause is found, the presence of mould in some part of the alimentary canal is to be suspected, and the treatment here advised, which in any case can do no harm, may give therapeutic evidence of the cause of the trouble.

The mould may be found in the nose, stomach, duodenum, small intestine, or colon. Diminished muscular action favours its lodgment, and restoration of normal muscular action is often an essential element of the cure. For the same reason the presence of mould in the intestine demands such cathartics as stimulate muscular action.

As already stated, the green mould is destroyed by sodium bicarbonate. Lysol is retained as a remedy because it kills the numerous bacteria that accompany the mould. Copper salts will probably be found useful, but I have not tried them. Several unsuccessful attempts have since been made to cultivate specimens for further examination.

Most persons are familiar with the appearance of green mould in vomit and in fæces. But it has been looked upon as without importance even in cholera nostra and infantile diarrhœa, where it is the most prominent symptom. I judge it to have a causal relation to these conditions for the following reasons:

(1) Mould is present often when no other sufficient cause of the symptoms can be found.

(2) It is present in abundance in some of our most fatal diseases.

(3) Its partial destruction is followed by immediate improvement.

(4) Its complete removal in such cases is an essential element in recovery.

LUNG ABSCESS

By E. M. von Eberts, M.D., M.R.C.S. (Eng.)

Surgeon to the Out-Patient Department of the Montreal General Hospital

SOLITARY abscess of the lung most frequently occurs as a sequel of pneumonia due to the pneumococcus or the influenza bacillus. The most characteristic symptom is the expectoration of large quantities of purulent and fœtid sputum, which, in addition to pus cells, fibrin, and blood, contains structural elements of the lung itself, owing to the attendant necrosis and ulceration. The cough is paroxysmal and severe, and is followed by extreme exhaustion. The range of temperature varies with the severity of the process and the freedom of the bronchial drainage.

Where the abscess is situated in the periphery of a lobe, the bronchial communication is small and is subject to periodical closure. At such times, owing to the retention of pus within the cavity, the cough becomes more or less continuous, the sputum is mucoid and frothy (the typical sputum of lung irritation due to tension), and contains streaks of pus. The patient complains of thoracic pain. A friction rub may develop. The temperature shows marked variations, and chills and sweating are apt to occur. During a severe fit of coughing bronchial drainage may suddenly be re-established and the sputum again become profuse, wholly purulent, and fœtid.

Not infrequently abscess in the extreme periphery of a lobe extends in the direction of the pleura, leading to the formation of secondary thoracic empyema. The mural forms of empyema are usually secondary to true lung abscess. Pyopneumothorax following pneumonia is also, as a rule, secondary to suppuration and necrosis in the lung. In these latter cases, in addition to the presence of air and pus in the pleural cavity, the sputum is purulent and excessive and contains yellow elastic tissue.

In the localization of lung abscess the use of the *x*-ray, especially the stereoradiograph, is of the first importance. As will be seen from the illustrations, the area of inflammatory infiltration

Read before the Montreal Medico-Chirurgical Society, March, 1911.

of the lung is very extensive, although there is usually to be made out a zone of maximum density. Owing to the fact that, compared with the area of infiltration, the abscess cavity itself is always small, localization based upon percussion and auscultation alone has led to many operative failures.

In deciding upon the point of attack, one should take into consideration all the physical signs. Where a pleural friction has existed or where there is localized tenderness on pressure, there are likely to be adhesions between the pleuræ.

Dependent drainage should, of course, be secured. In deep-seated abscess, owing to the danger of severe hæmorrhage, the approach through the lung substance should proceed with caution. Packing with gauze for twenty-four hours to arrest hæmorrhage may be necessary before the tube is inserted. A drain with a bevelled extremity and a lateral opening should be employed.

In chronic cases, owing to the extensive fibrosis, there is, as a rule, in addition to the more characteristic signs and symptoms cited above, marked retraction of the heart towards the seat of the disease. For this reason exploratory puncture, either before or after thoracotomy, should be undertaken with the utmost care, the point of maximum intensity of the heart sounds having first been definitely ascertained. This precaution applies especially to those cases in which the abscess is situated in the upper half of the chest.

In chronic abscess of the lower lobe less reliance can be placed upon the radiograph. Here, rather, must one pay special attention to the symptoms and physical signs. In such cases, in addition to a more or less constant expectoration, there are periods when the amount becomes excessive, less nummular, rather of a pea soup consistence, and extremely fœtid. Such periodic evacuations are preceded by a gradual rise in the high-water mark of absolute dulness with a corresponding high tide in the temperature curve.

In performing thoracotomy upon abscess cases one should have at hand a pressure apparatus to forestall the dangers of pneumothorax. In probably one case out of every three the pleuræ at the site of operation are found to be free from adhesions. To drain an abscess in the presence of pneumothorax would simply be to invite widespread pleural infection.

Owing to the bronchial communication, the use of suction appliances in the conduct of abscess cases after operation is seldom possible. Where pneumothorax develops secondary to peripheral abscess of the lung, the bronchial communication usually closes

rapidly, leaving the condition of pyopneumothorax to be dealt with as a simple empyema to which aspiration and differential pressure methods are applicable.

Illustrative Cases

Case 1. Acute abscess of the left upper lobe.

B., a male, aged forty years, was taken ill about December 14th, 1910, with influenza. He was confined to bed for three days and to the house for a further period of one week. He then returned to work, although the cough persisted. December 23rd, following a severe coughing spell, the sputum became excessive and fœtid.

January 14th, the patient was seen with Dr. Lafleur. The patient looked distressed and had severe paroxysms of coughing; the sputum was purulent and extremely fœtid. There was dulness in front from the upper border of the second to the lower border of the fourth rib on the left side, in the apex of the axilla, and at a corresponding level in the interscapular area behind. Between the area of dulness in front and the pericardium there was a distinct wedge-shaped area of hyper-resonance. In the lower axilla and at the base behind there was impaired resonance, thought to be due to fluid. The skiagram showed a definite area of infiltration in the left upper lobe, corresponding with the area of dulness.

January 17th, the dulness in front and behind over the upper lobe was more pronounced and slightly greater in extent. The posterior area especially showed distinct broadening from above downward. The paroxysms of coughing were much more severe, and the expectoration was abundant, white, and frothy, containing a few streaks of pus. The patient complained of pain in the chest, holding the left side when coughing. The temperature was higher. (Fig. 1). The alteration in the character of the sputum, the development of pain, and the rise in the temperature curve, suggested closure of the bronchial communication, which again indicated that the abscess cavity lay towards the periphery of the lobe. This was in agreement with the skiagram (Fig. 2), in which the darkest part of the shadow was seen to lie towards the apex of the axilla.

January 18th, under local anæsthesia, three centimetres of the third left rib in front were resected. The pleuræ were found adherent. An abscess cavity lying in an upward and outward direction was located and drained. Rapid improvement followed. The cavity was irrigated daily with peroxide solution, a portion of which was expectorated on each occasion. On February 2nd,

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as there was evidence of repair in the wound, and the cough and expectoration had entirely disappeared, the tube was removed, and three drachms of Beck's paste (No. 1) were injected, a small portion of which was coughed up (Fig. 3). February 3rd, there was no discharge from the sinus. The pericardium, which had formed the median boundary of the drainage tract, was seen to lie directly behind the thoracotomy wound. The degree of retraction of the mediastinum and its contents towards the diseased area may be seen by comparing the relation of the vertebral border of the right scapula to the right margin of the pericardial shadow in Figs. 2 and 4. February 8th, the sinus had completely cicatrized.

Figs. 2 and 4 show also the extent of the pulmonary infiltration before operation and after the sinus had closed.

Case 2. Chronic abscess of the right lower lobe: acute abscess of the right upper lobe.

K., aged twenty-four, labourer, was admitted to the service of Dr. Molson at the Montreal General Hospital, November 10th, 1910. For four months the patient had suffered from night sweats and a severe cough accompanied by fœtid, purulent expectoration. He was thought by his friends to be tuberculous. Three days before admission, after exposure to cold and wet, the patient had a chill with pain in the right side.

On admission the patient was poorly nourished, the face was suffused, the mucous membranes cyanotic, and the skin hot and dry. The fingers showed marked clubbing, and there was frequent cough with copious, slightly fœtid, muco-purulent sputum. The patient complained of pain over the right side of the chest. On examination of the thorax the movements on the right side were found to be limited. There was dulness below the third rib in front and the fifth rib behind. Over the whole area of dulness there was distant blowing breathing and bronchophony with large moist and fine crepitant râles. In addition there was a widespread pleural friction at the base behind. A diagnosis of lobar pneumonia was made.

Towards November 20th the temperature gradually declined. Between the 20th and 26th the evening temperature reached 102° and the expectoration had become more copious and distinctly fœtid. The dulness extended upwards anteriorly to the level of the second rib. From November 26th to December 16th the temperature ran an intermittent course with periods of improvement, although the quantity and character of the sputum remained un-

changed. Frequent examinations for tubercle bacillus were negative. The patient was transferred to the surgical side.

Exploratory thoracotomy was performed after the resection of a portion of the seventh and eighth ribs in the midscapular line. The pleuræ were found adherent but no pus was found, and puncture of the lung was negative.

January 6th. Through the courtesy of Dr. Hutchison the patient was transferred to my care. He was emaciated and cyanotic. There was marked clubbing of the finger tips and incurvation of the nails. Frequent attacks of coughing left the patient exhausted. The sputum was profuse, nummular, and fœtid. The right side of the thorax showed almost complete immobility with inspiratory retraction of the intercostal spaces in the lower axillary zone. On percussion there was hyper-resonance on the left side in front as far as the right sternal border, including the normal area of cardiac dulness. There was dulness over the whole of the right thorax, both in front and behind (Fig. 5), most marked in front above the intrapulmonic fissure. Over this latter area the heart sounds were heard with maximum intensity. It was evident that the heart had been strongly retracted towards the diseased lung. There was slight bulging of the chest wall at the lower and outer border of the pectorilis major, with tenderness on pressure.

Under local anæsthesia a small portion of the fifth rib was excised at the outer margin of the pectorilis major muscle, aspiration in this location having yielded pus. On opening the pleura, a cavity 2½ cm. in diameter was explored, and on separating the adhesions in a downward and inward direction the apex of the heart was encountered. There was also found erosion of the periosteum covering the inner surface of the fourth rib above the thoracotomy wound.

Notes. January 7th. There is a profuse discharge from the thoracotomy wound. Communication with the bronchus exists. The cough is less frequent and there is a great diminution in the quantity of sputum. The temperature has fallen to normal. The general condition of the patient has very much improved and nourishment is well taken.

January 26th. Skiagram, confirming the physical signs, shows almost complete disappearance of infiltration in the upper lobe. The sinus is rapidly contracting but still communicates with the bronchus. Dulness over the lower lobe persists. (Fig. 6).

January 30th. The temperature has been gradually rising since the 26th (Fig. 7), culminating to-day in an increase in the dis-

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charge from the thoracotomy wound and the expectoration of a large quantity of thin, fœtid sputum. With the gradual increase in the temperature curve, it has been noted that the upper limit of the dulness remaining over the right base has been gradually rising. (Fig. 8).

January 31st. Following the evacuation above referred to, the temperature fell to normal. The upper limit of dulness behind has receded. These changes in the physical signs suggest that the lower lobe is the seat of the chronic lesion from which the patient suffered for four months prior to admission. An exploratory puncture in the tenth interspace withdrew 200 cc. of fœtid pus.

February 2nd. Under one per cent. solution of novacain a small portion of the ninth rib in the mid-scapular line was excised, and 450 cc. of pus evacuated from a large abscess cavity in the right lower lobe, lying 8 cm. from the pleural surface. Free and dependent drainage was established.

February 6th. The tube was removed and the cavity injected with a small quantity of Beck's paste (No. 1). The general condition of the patient is greatly improved. He is now allowed up. The temperature remains normal.

February 7th. The cough has almost entirely disappeared. The discharge is scanty and of a serous character. A second injection of Beck's paste (No. 1) was given.

February 13th. A catheter was passed into the cavity and a third injection of Beck's paste made. The patient is rapidly gaining in weight.

February 18th. A catheter was passed into the cavity with difficulty, and three grammes of No. 1. paste injected. The temperature has remained normal. There is no cough or expectoration and no discharge apart from the extruded paste.

February 27th. The skiagram now shows that the infiltration of the lower lobe has also disappeared (Fig. 9). A minute portion of bismuth paste remains in the cavity or drainage tract.

March 6th. A small sinus leading to an infected rib stump has finally closed after separation of sequestrum. The patient was discharged. The gain in weight was 25 pounds.

No. 1. bismuth paste with a melting point of 99° F. was used on all occasions in order that it might be expelled from the cavity as the walls of the latter contracted.

I wish to acknowledge my indebtedness to Dr. Walter A. Wilkins for the excellent skiagrams from which the photographic illustrations have been prepared.

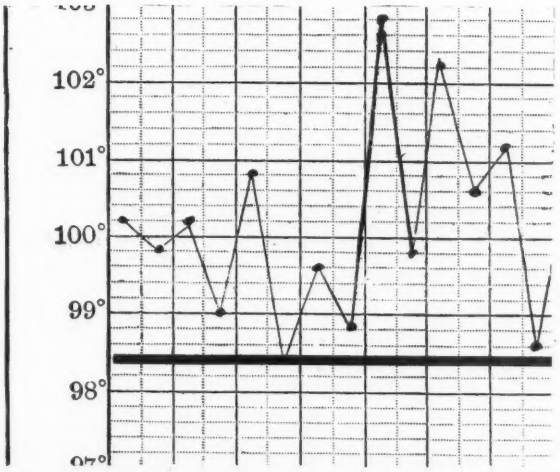

FIG. 1.—Showing rise of temperature owing to interruption of bronchial drainage.

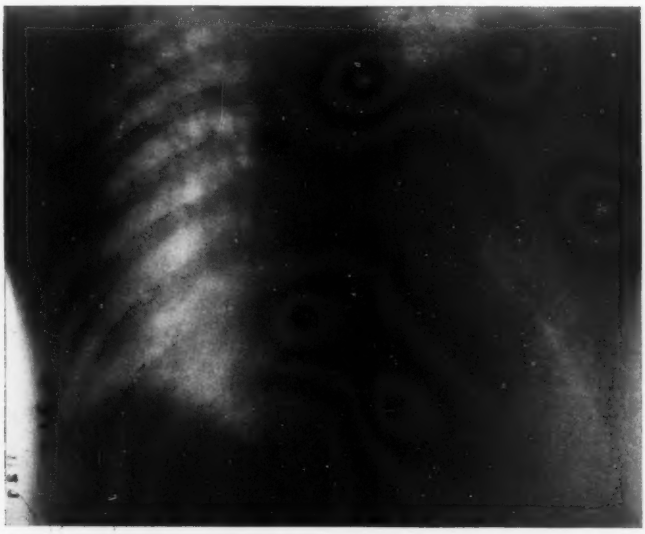

FIG. 2.—Photograph from skiagram taken before operation (front view), showing area of infiltration due to abscess formation in the left upper lobe. The point of greatest density is seen between the anterior axillary and nipple lines. It was in this zone also that pleuritic friction was noted. The light area to the left of the apex of the heart corresponds with the zone of hyperresonance noted in the report.

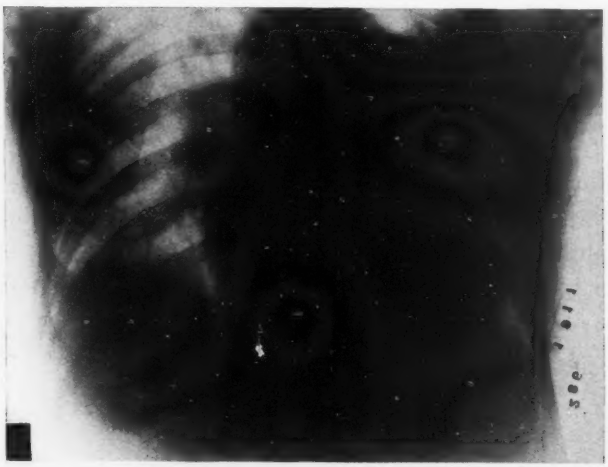

FIG. 3.—Photograph of skiagram (front view), showing injection of remains of abscess cavity and drainage tract with bismuth paste.

FIG. 4.—Photograph from skiagram (front view) taken after the sinus had closed, showing marked decrease in the extent of lung infiltration. The increased area of transparent lung tissue on the right side is due to retraction of the pericardium and its contents towards the abscess cavity.

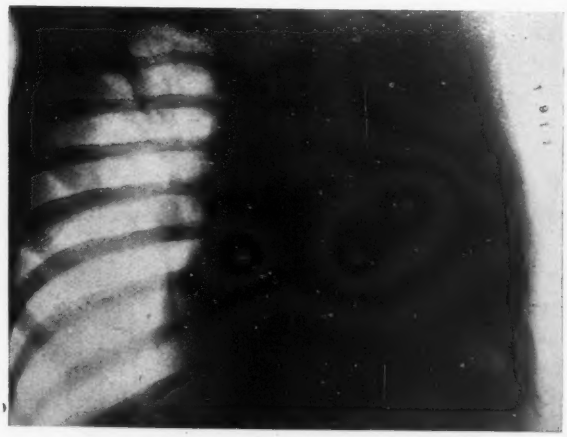

FIG. 5.—Photograph of skiagram taken before first operation (dorsal view), showing shadow over the whole of the right lung.

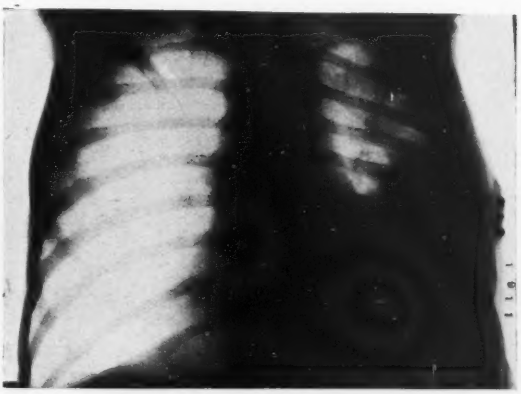

FIG 6.—Photograph of skiagram (dorsal view), showing almost complete disappearance of infiltration in the right lung from the apex to the level of the seventh rib behind, following drainage of abscess in the upper half of chest.

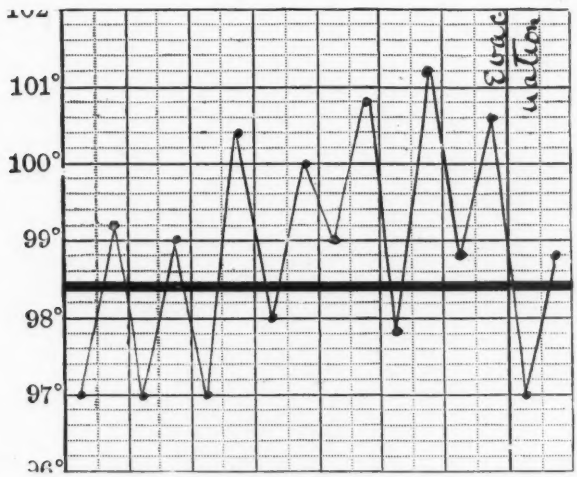

FIG. 7.—Maximum—minimum temperature chart, showing the gradual increase in the temperature, associated with an increase in the area of dulness due to accumulation of pus in the abscess cavity.

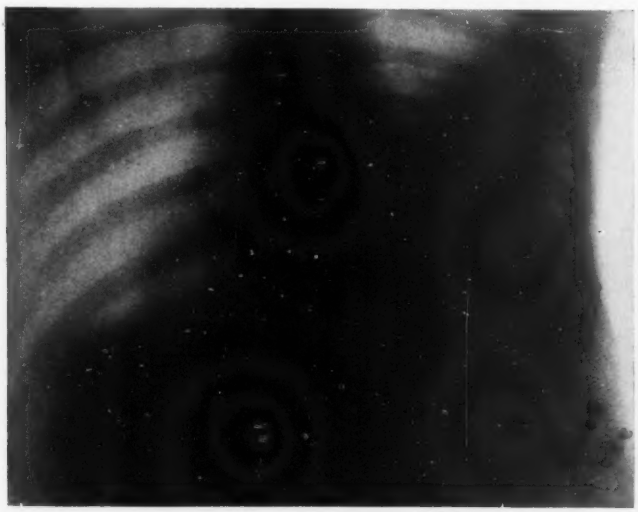

FIG. 8.—Photograph of skiagram (dorsal view) taken before drainage of abscess cavity in lower lobe, showing a distinct rise in the upper limit of the shadow over the right lung owing to accumulation of pus.

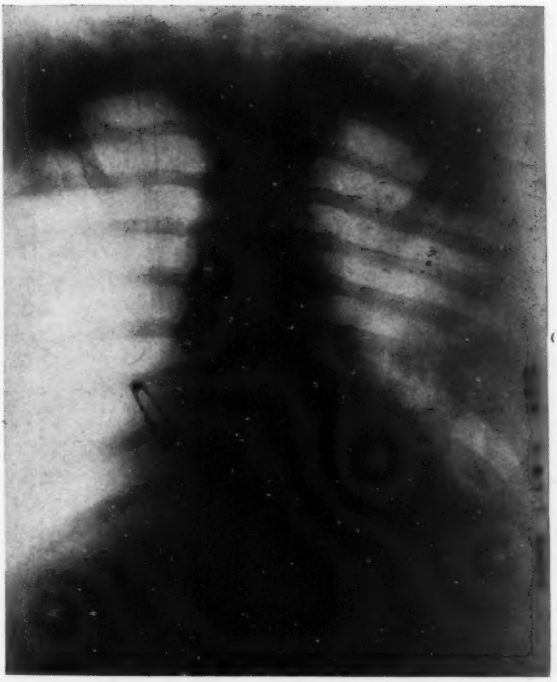

FIG. 9.—Photograph of skiagram taken February 27th, 1911 (dorsal view), showing disappearance of all infiltration in right lung. The important part played by the mediastinum and its contents in the obliteration of the large basilar abscess cavity is shown by the transposition of the heart shadow. The view presented corresponds closely to the anterior view of the normal heart and pericardium.

A NEW COMBINED EXAMINING AND OPERATING AIR DISTENTION ENDOSCOPE

By G. S. Gordon, M.D.

Genito-Urinary Surgeon to the Vancouver General Hospital

THIS instrument makes small claims to originality except in combining, in the author's opinion, the best properties of all endoscopes known to him. The ordinary non-dilating urethroscope allows of a view of only a very limited area of the urethra at one time, and that merely as it rosettes into the open end. In the hands of the most experienced it gives but an imperfect idea of the milder lesions of the urethra, and even greater lesions, such as papillomata and warts may simulate closely natural folds of the urethra. Yet again, because this instrument has first to be introduced to the triangular ligament, all pus beads marking the orifices of the crypts of Morgagni, and of the mouths of Litre's and Cowper's gland are displaced, and the picture presented loses much of its value. Moreover, operation on the cushion-like folds of the undistended urethra is most difficult.

Many attempts have therefore been made to construct an endoscope through which one can see the walls of this passage put on tension, in advance of the instrument and through which operative work can be better done. The great difficulty has been to devise an instrument which would give the right degree of distention and a good light, while leaving the operator's hands free. These requirements I think are satisfactorily filled by the instrument here shown.

The right degree of distention is given by the patient himself by pressure on the dilating bulb, when asked for. This attachment does not appreciably disturb the balance of the endoscope. When in operation it is unobtrusive.

After introduction into the urethra to just beyond the fossa navicularis the obturator is removed (if it has been necessary to use it at all) and the magnifying lens put in place. The patient is asked to press the bulb; dilatation of the urethra follows and then the tube is gradually advanced until the external sphincter of the

bladder has been reached. The whole passage has thus been exposed with the minimum of discomfort.

A certain amount of air leakage occurs from the meatus and around the instruments introduced through the finestrum; but not sufficient to disturb any balance required of the patient. By simply disconnecting the air attachment, the urethra collapses and the typical rosette obtained with an ordinary endoscope presents itself. This picture can be obtained at any level and its truthfulness to conditions has not been disturbed by having had the endoscope tube first pass over it.

The lamp arrangement of Koch's endoscope has been adopted because it is least cumbersome and allows of manipulations through the main tube better than if the light were placed free therein or reflected from an outside source. Its one drawback is that only the two-thirds of the circumference opposite the lamp is illuminated when the instrument is in line with the urethra; but by slightly "canting" the endoscope, a very good light floods the whole lumen for a distance of several centimeters beyond the endoscope. The instruments consist of:

1. A carrier for a filiform bougie. With air dilatation of the strictured urethra, the true passage is easily distinguished even when false passages are present. The carrier is placed against the opening and the bougie is fed through. A ureteral catheter will usually pass in the same way through the carrier which renders it rigid up to the strictured opening.

2. A probe pointed knife which is used to lay the crypts of Morgagni open. These sacs are often the nidus of infection in chronic urethritis, and if their cavities are thus made one with the urethra, injections or irrigations can bathe them.

3. A syringe for injecting solutions into the crypts of Morgagni.

4. An electro-cautery carrier to cauterize warts.

5. A curette with cutting surface directed towards the operator. To remove papillomata or pedunculated warts, the end of the endoscope is laid against the base of the tumour; the curette is advanced beyond it and then withdrawn in such a way as to catch the growth between curette and endoscope edges.

This armamentarium answers all requirements. Suitable scissors or foreign body forceps can be had. Each instrument is held from dropping beyond the endoscope tube, until required for operation, by a spiral spring. The endoscope and accessories have been constructed for me by the Electro-Surgical Instrument Company of Rochester, New York, and can be obtained from them.

To illustrate Dr. Gordon's Endoscope

ON THE USE OF RADIUM IN OPHTHALMOLOGY

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IT may be of interest to consider the physiological action of radium on the eye, and I therefore invite attention to some of the results of the observations of E. S. London, Greef, Hardy, and Anderson.

If one brings radium, in sufficient quantity, in contact with the closed eye, in a dark room, the patient experiences a sensation of light. This can be produced by laying the radium on the temple or on the vault of the skull, and occasionally, also, when it is applied to the occiput. The phenomenon is probably produced by the irritation of the cortical, visual centre. Blind persons who have not lost the perception of light, experience the sensation of light as well as those who see. E. S. London[1] states that owing to the power possessed by radium of producing, on a florescent screen, bright lines and figures, it was possible in the case of a man suffering from partial optic atrophy, to enable him to see, to read, and to write by the "silhouette" method.

Investigations have been made with the view of finding out whether the radium rays had a specific action on the eye through the nervous elements, through the media, or through the optic nerve. Greef,[2] who has studied this subject closely, has come to the conclusion that the radium rays act neither directly on the retina nor upon the visual purple.

He is also of the opinion that in consequence of the lack of refractive power of the rays, no picture can be thrown on the retina. The sensation experienced, therefore, is produced by florescence of the ocular media.

Hardy and Anderson submitted the retina of a freshly-killed frog for twenty hours with 50 mg. of radium bromide at a distance of 3 mm. They discovered that the exposed retina did not differ from that of the control eye, either in relation to the visual purple

Written for the Academy of Ophthalmology and Otolaryngology, annual meeting, Indianapolis, Indiana, 1911.

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or in any other respect. Hence the radium rays have no direct influence on the retina. The most active agents in producing the florescence are the Beta rays, as is proved by the refraction of these rays by a magnet when the light phenomena markedly decrease. The Beta rays do not reach the retina, being absorbed by the cornea, lens, and vitreous. These media correspond to the skin layer of 6·6 mm. in thickness.

The following conclusions have been reached: The radium rays produce a visual sensation which is probably a florescence of the refractive media and possibly of the retina itself. On the other hand, it is in part due to the direct irritation of the cortical, visual centre producing an increase of visual power. In consequence of their material nature (being composed of particles) and of their irrefragibility, it is not possible for the radium rays to form an image on the retina.

We owe the introduction of radium in the treatment of eye diseases to Dr. Mackenzie Davidson,[3] in London, Professor Bayet, in Brussels, and Drs. Octave Clause and Darier, in Paris. Dr. Davidson said at the meeting of the British Medical Association in London in July, 1910: "But, if radium has not so far fulfilled all the hopes which were entertained of it, it has, at any rate, accomplished something, and it is encouraging to turn for a moment to a new field of experiment in which it has yielded good and definite results—namely, in certain diseases of the eye."

The diseases of the eye to which radium can be successfully applied are external—the eyelids, cornea, and conjunctiva. It has been tried in chronic glaucoma, but the results were not such as to encourage the observers to persevere with the treatment.

Radium may be applied either directly to the eye, "naked," as it is called, or by some method of filtration. In applying it "naked" the powerful caustic effect should be borne in mind, and also that the ill-effects only manifest themselves after an interval of two weeks or more, when serious sloughing may take place. In my opinion, in all cases, except epithelioma, the rays should be filtered through lead, tin, or aluminum. The eye should be cocainized, the apparatus being held in contact for ten or fifteen minutes, and not more. The application may be repeated daily. The applicator, which I show, contains four milligrammes of pure radium mixed with bromide of barium, and spread on the flat surface, and covered with waterproof varnish. In ulcers of the cornea I have found the round applicator of much use. It is primarily intended for nose and throat work, and contains three milli-

grammes of radium bromide. When a tube is used it should be covered with lead foil and thin rubber tissue. For external application, a disc or square is used of various sizes. The square shown contains four milligrammes of radium bromide, diluted with barium bromide, and covered with impermeable varnish. When applied to the lids for epithelioma or rodent ulcer, the applications should be of one hour each, and the Alpha rays should be screened off with lead filters. I have seen no ill-effects from its use, but several times patients have said that they saw sparks.

Some patients complain of a little pain after its use, and in almost all there is increased vascularity and irritability for a time. The anæsthetic effect is generally noticeable, the application being followed by a relief of pain.

The diseases for which I have used radium, or have seen it used, on the eyelids, have been rodent ulcers, angiomas, and epitheliomas. The following is a short history of one of these cases: A man aged sixty was referred to me by Dr. Langstaff, of Richmond Hill. He had a large, rodent ulcer of twelve years' duration, occupying the inner angle of the left eye, the eyelids, and extending down the nose for about two inches. There is almost complete destruction of the lachrymal sac. The patient has had forty-four hours of treatment, extending over three months, half an hour to one hour at a time, at intervals of a week or two weeks, with the result that the part is covered, for the most part, with a smooth, fine scar. There is still a little ulceration of the lower part of the nose, but it is healing rapidly. I saw, at the Institute of Radium and at Dr. Massoitti's clinic in Paris, several cases of epithelioma of the lids, in one of which there had been a return, to a slight extent, after a period of three years.

R. Abbe,[4] records the following remarkable case of sarcoma of the eyelid: A man of forty-five had a growth for a year, which involved two-thirds of the lid. It grew equally on the mucous membrane, on the eye, and on the skin, so as to form a mass in which all semblance of the lid and lashes was lost. It resisted Rœntgen ray application and all other treatment by ophthalmologists. A section was taken from its centre and showed small celled sarcoma. The patient was offered to me to try radium before excision of the lid. I laid strong radium in glass tubes upon it four times during one week, protecting the eyeball by a thin, lead shield. Then I waited. Week by week it melted away. In eight weeks it was absolutely gone. Five years have gone by, and not a trace of it has recurred. Nothing so nearly resembling the marvellous has ever been my fortune in surgical work.

The following case of sarcoma of the eyebrows is an example of the rapid disappearance of sarcoma under the influence of radium. A lady, aged sixty-nine, was referred to me by Dr. Perfect, of West Toronto, on September 26th, 1910. She had a tumour in the right eyebrow about the supraorbital notch, measuring 2½ cm. by 1½ cm., oval in form, firm, and elastic to the touch. Dr. Perfect informed me that he had removed the growth three weeks previously and had submitted it to Dr. Archibald for examination, who had reported that it was a small-celled sarcoma. Within three weeks it had recurred, larger than ever, and was growing rapidly. I applied a plaque of four milligrammes of radium for one hour daily, for eleven days, then the tumour gradually disappeared, and has not, up to the present writing, shown any signs of returning. To render the cure permanent she has had two further treatments of one hour each, at intervals of four weeks. At the present time, one year later, there is no sign of recurrence.

Conjuctiva-trachoma. This intractable disease seems to give very encouraging results with the radium treatment in the hands of Mackenzie Davidson, Darier, Lawson, Selenkowski, and others. Let me quote Selenkowski's observations.[5] He treated twenty-three patients (44 yeyes). In nearly all of the cases the upper and lower lids showed formation of granules, with diffuse infiltration. He first employed one milligramme and later one centigramme of radium bromide. After two or three sittings, the granules became flattened, but the epithelium remained intact. In the following sittings the number of granules diminished considerably. The treatment was continued until the conjunctiva became perfectly smooth. Every eye was exposed to the influence of radium from fifteen to one hundred minutes. In no case were any scars seen; in some cases there was hyperemia. The deeper parts of the eye showed no reaction whatever. No other remedies were used during the treatment. Dinger,[6] of Amsterdam treated sixteen cases; of them, seven were cured. Old cases complicated with pannus, yielded slowly, but the granulations and pannus gradually disappeared, and the patients were able to resume work. The cure was more rapid and less painful, and therefore preferable to caustics. Pterygium has been treated with radium. The results hitherto obtained are encouraging: about one-half the cases were cured.

Lupus of the Conjunctiva. Wickham and Degrais, report the successful treatment of a case of lupus of the conjunctiva. The history of this case is as follows: A young woman in the services of Dr. de Beurman was treated for a lupus of the palpebral

conjunctiva of both the upper and lower lids. One-half hour of application of radium sufficed to effect a cure. An apparatus containing 6 mg. of pure radium covered with rubber tissue was applied for ten minutes at a time for three days in succession on three places on the upper lid and two places on the lower one. It produced a slight inflammatory reaction followed by sedation and reduction of swelling and redness. Three weeks later a second series of applications was made similar to the first. The cure which was obtained has continued for three years.

Spring Catarrh. This is notoriously one of the diseases of the eye which has resisted all treatment. Here and there a good result has been obtained by diverse methods, but nothing certain had been accomplished, until the advent of the radium treatment. Dawson Turner,[7] publishes five successful cases, the first of which was cured five years ago, and there has been no return. Let me cite one of them: It is that of a boy, aged six, both of whose lids were covered with typical granulations and irregular, pavement-like blocks. The disease had lasted for some months. Ten milligrammes of pure radium bromide was used for ten minutes daily. Three or four weeks elapsed before any marked improvement appeared; then it was slow and steady. In two months the treated eye showed great improvement, only one nodule being left, and six weeks later it was entirely well, when the treatment of the other eye was begun. Mackenzie Davidson also reports successful cases.

Cornea. Lawson and Davidson,[8] publish seventeen cases of corneal ulceration treated by radium, sixteen of which were cured. Three were hypopion ulcers, one a dendritic ulcer, four cascular, two herpetic, one Moorens, and two traumantic. The failure was in a case of deeply infiltrating yellow ulcer, complicated with inflammation of the lids. They report seven cases of interstitial keratitis, five improved, two doubtful. Four cases of opacities of the cornea, results uncertain. They say: "It is certain that if any success is to follow the treatment of corneal scars by radium, the exposures must be continued over a long period of time, and the dosage must be fairly large."

I have treated three cases of corneal ulcer with marked success —one a recurrent vascular ulcer, one extensive sloughing indolent ulcer, and one infiltrating deep ulcer, which had resisted all other means of treatment.

Iris. I have recently read of the successful treatment of tuberculosis of the iris, but I am unable to locate the article and give my authority for the statement. The treatment consisted in the injection of radium emanation into the anterior chamber.

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Uveitis. C. H. Williams[9] states that he has been able to relieve pain and cause the absorption of inflammatory products in chronic uveitis.

Darier,[10] first remarked the analgesie action of radium on the eye, and described a series of cases in which, through radium therapy, he was able to relieve severe pain in supraorbital neuralgia, in pain from epithelioma of the orbit, iridocyclitis and gouty pains in the eye.

Fundus. It seems to me that there are two classes of cases with which one has not as yet experimented, and which resist all known means of cure. I mean opacities of the lens and of the vitreous. There is a form of lentocular opacity which is characterized by minute opacities, which remain stationary over a very long period of time.

I think that I have said enough to show that in radium we have a powerful, new aid to the therapeutics of the eye. In the cases of rodent ulcer and epithelioma of the lids, angioma, trachoma, spring catarrh, and in certain ulcers of the cornea, we can safely say the definite results have been obtained.

In conclusion I can say, without exaggeration, that radium has proved its work. As is the case with all new methods of treatment, too much has been expected of it, and the impossible has been attempted. True, carcinoma is still outside the possibilities of cure, while sarcoma, if superficially situated and of recent growth, will rapidly melt away.

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Case Reports

A SIMPLE METHOD OF TREATING FRACTURED CLAVICLE

PERHAPS other surgeons have found, as I have, that the usual methods, such as Sayre's, for treating a fractured clavicle are not very satisfactory. Previous to 1907 I had tried all the usual methods, except operative, but generally I found the patients complaining of being very uncomfortable. For this reason I devised the following very simple method, and used it, according to my notes, for the first time on June 24th, 1907; and since then I have employed it a limited number of times, always with satisfaction.

Having an assistant hold the patient with the shoulders retracted, a two-inch strip of adhesive plaster in the hands of the surgeon is attached firmly to the front of the affected shoulder and over the point of it. It is then swung around the back of the chest, under the opposite arm, across the front of the chest, and finishes under the mammary or axillary region of the affected side. Theoretically this is not quite proper, as it pulls down the affected shoulder, but this is corrected by a sling to elevate the elbow.

In regard to being the original user of this apparatus, I had never seen it described or employed before my own use of it, but I willingly concede that other surgeons have probably employed it before me. I heard Dr. W. J. Mayo say some years ago, "If you discover what you think is a new method in surgery, you may rest assured that, if it is a good method, some one between Hippocrates and yourself has used it." And after I had tried this apparatus two or three times, I noticed, in reading an advertisement in the *New York Medical Journal*, April 13th, 1907, that Dr. Bellamy had described a method like mine, except that he advised raising the elbow by laying the hand of the affected side across the chest towards the opposite shoulder, and fixing it there by adhesive plaster, much as in Sayre's method, but I prefer the sling, as it is more comfortable.

Fort William. R. J. MANION

MALIGNANT ŒDEMA

GEORGE ALBERT BROWN, aged sixty-four, was admitted to the Victoria General Hospital, January 17th, 1911, suffering from a swollen hand and arm. The patient gave the following history: While cutting kindlings on January 8th, he thought he felt a splinter in his right thumb, palmar surface; he picked at it with a pin but could find nothing. The following day, or soon after, the hand began to swell rapidly and became quite painful.

On examination the hand and forearm were found to be red and much swollen. The redness extended as a narrow streak along the lymphatics towards the axilla. It had not the fiery redness of erysipelas. The swollen parts were soft and œdematous, so much so that the thumb could be buried out of sight when looking along the long axis of the limb. There was very little swelling and tenderness where the splinter was supposed to be, and no deep tenderness along the course of the long flexor of the thumb. There was considerable tenderness above and under the annular ligament, more than anywhere else, as also more hardness, but the brawny hardness of acute cellulitis was nowhere present. The glands in the axilla were not affected, appreciably at least. The patient's general condition was bad. He was dull, apathetic, and dirty. His temperature was 95°, pulse 65, and respiration, 22.

DIAGNOSIS. Three conditions were considered,—erysipelas, cellulitis, and malignant œdema. Erysipelas was ruled out at once, owing to absence of the characteristic redness and firmness of the inflamed area. Cellulitis was also ruled out because of the absence of intense pain, tenderness, and brawny hardness, suggestive of suppuration. The condition in the vicinity of the annular ligament was suggestive of pus below the deep flexors, but this was doubted, and a diagnosis of malignant œdema was made. The conditions answered fairly well to the characteristics of that infection. The cellular tissues seemed more involved than the deeper structures. The œdema was marked. There was no great evidence of a pus focus, showing negative chemotaxis even on the ninth day. There seemed to be a faint odour resembling burnt bone, not enough to be decisive. There was no emphysema of the tissues. The only other doubtful feature was the length of time that had elapsed, eight days, since the infliction of the wound. But the

patient's general condition was bad, though the œdema had not gone above the elbow.

TREATMENT. Multiple incisions and the free use of a hyperoxide. I made six linear incisions over the dorsum of the forearm and hand, and several over the flexor surface of the forearm. Above the annular ligament I went through and separated all tissues down to the bone, to make sure of the absence of pus. There was, however, no evidence of inflammation in the deeper structures. The pathogenic condition did not go below the deep fascia, but was confined to the subcutaneous tissues, and consisted of a gelatine material which freely parted with a pale watery serum. It seemed to have squeezed all the blood out of the capillaries, there being no bleeding except where vessels of larger size were cut. This anæmia, with the presence of a whitish, gelatinous substance gives a pale cast to the redness of the skin in the first stages. The dusky hue referred to by some authorities comes on later. In a case reported by me in 1902, the pressure of this gelatinous material had completely stopped the circulation in one of the fingers. Its tip had turned black, but the circulation was reëstablished on relief of tension by incision.

After packing the incisions with gauze soaked in a hyperoxide, I covered the limb up to the shoulder with a thick layer of absorbent cotton, soaked in the same solution. The patient rallied in a few hours. His temperature rose to 102°, pulse 90, and respiration 35. Next day the swelling was much diminished and the red streak up to the arm towards the axilla was scarcely perceptible.

On the nineteenth, a few more incisions were made. In addition to the local applications of the hyperoxide, his forearm and hand were immersed in it for half an hour twice daily. Under this treatment he continued to improve. The temperature dropped to normal on the fourth day and remained so. On the seventh day, the swelling between the incisions not going down as rapidly as I wished, I made a few more incisions. To my surprise I found the gelatinous material transformed into vascular tissue, which bled freely. In the deeper parts close to the fascia, a streak of grey, minus the œdema, yet remained. The swelling, now due to the vascularized tissue, slowly became transformed into fibrous tissue, leaving the limb bulky and the joint stiff. The wrist remained stiff for a long time. He was discharged cured, April 11th, nearly three months after admission.

NATURE OF INFECTION. Cultures in agar-agar, and in nutrient gelatine were made from the serum, also, by means of a hypo-

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dermic syringe, into a fresh egg. After twenty-four hours the cultures showed the characteristic gas bubbles and liquefaction of the gelatine. Slides were made from the culture which showed long rods answering to those of malignant œdema. There were no streptococci or staphylococci. On the third day the egg burst open, though two control eggs remained unaffected. About 2 cc. from the infected egg were injected under the skin of a large rat. It died in sixteen hours. Its tissues were greatly swollen and œdematous. Stab cultures were made from the rat and these showed liquefaction and bubbles. Slides from this culture showed the same bacillus as before.

General Remarks. This is the second case of malignant œdema I have treated successfully in the same way. The treatment, to say the least, is rational. The anærobic nature of the bacillus renders it peculiarly sensitive to oxygen. Any one who has tried to preserve it will readily admit this. It would seem, too, that in the body it does not thrive as well in the more vascular parts as in the less vascular subcutaneous fat. It is therefore within easier reach of local applications applied to the skin. In this case, the dorsal surface of the fingers was œdematous. They were not incised, but they got well without incisions, showing that enough of the hyperoxide was absorbed through the skin alone to kill the bacillus.

The officinal hyperoxides are permanganate of potash and peroxide of hydrogen. I used the former in my first case for several days before it was diagnosed, but it seemed to have no effect. It is too quickly deoxydized on coming in contact with the skin, very quickly after its application. The same is true of peroxide of hydrogen. Acetozone, the hyperoxide I used, has not this drawback. It is a proprietary preparation of well-known chemical constitution. I consider ordinary antiseptics, like carbolic acid and perchloride, next to useless, and too dangerous if absorbed in sufficient quantities. They do not in any way meet the conditions.

I came to use acetozone more by accident than by design. I had failed to diagnose the first case for several days. I looked upon it as a case of cellulitis, and had not seen it for forty-eight hours prior to placing the patient under chloroform for multiple incisions. In the meantime, it had advanced rapidly, and when the dressings were removed, to my horror I discovered the true nature of the condition. I could not amputate without consent, which involved letting the patient from under the influence of chloroform.

I shrank from sending a patient out into the world minus both arms. While in this dilemma the appropriateness of using a hyperoxide flashed through my mind. I made the incisions and swathed both limbs in cotton wool soaked in a saturated solution. I went next day prepared to ask his consent to amputate. When the dressings were removed, I was surprised at the improvement, and delighted to be relieved from broaching a more radical treatment. My house surgeon, Dr. W. S. McDonell, and the pathologist, Dr. J. M. Collie, are deserving of special mention for their interest in the case.

Halifax. M. CHISHOLM

"THE custom of having the teeth examined by a dentist at periodic intervals, even if no evidence of dental decay is apparent to the patient, seems to be rapidly growing, and a similar plan to include a complete physical examination at the hands of a physician would be of the greatest value in detecting, in their incipiency, certain pathological processes at a stage when possibly the observance of simple measures would serve to arrest the trouble. As an example, might be cited cancer of the uterus, the early stages of which are usually marked by certain symptoms apparently of little importance to the woman herself, and yet of great significance to the trained physician. Many other conditions, such as an abnormally high blood pressure, hardened vessels, albuminuria, etc., might be detected in time to avert a serious later catastrophe."

—*The Practitioner.*

Editorial

DR. JAMES F. W. ROSS

THE untimely death of Professor James F. W. Ross, M.B., L.R.C.P., Lond., of the University of Toronto, on November 17th, in consequence of a motor accident two days before, came as a shock and surprise and a cause of great grief to all members of the profession throughout the Dominion, and to many beyond its borders. Dr. Ross was an expert driver, and, as it chanced, was at the wheel himself on this occasion, a fact which apparently determined his death through the damage inflicted upon his chest wall by the steering gear when the motor was overturned into the ditch, while the chauffeur, though seriously hurt, escaped with his life. The injuries sustained by Dr. Ross are understood to have been fractures of three or four ribs on the left side posteriorly about their angles with contusion of the sternum and probable damage to the anterior mediastinum, followed by pneumonia and possibly fat embolism, which promptly proved fatal. The accident occurred on Yonge Street, in the village of Richmond Hill, when on his way to keep a professional appointment in Cookstown; and it affords another instance of the oft-noted fact that a favourite occupation, or a pursuit in which one has attained unusual skill, not seldom proves one's undoing. The writer recalls meeting Dr. Ross two or three years ago, driving his family from Land's End to John O'Groat's House, and this summer they made a very extensive motor tour in Germany and other parts of the continent, which the doctor said had given him more pleasure than any holiday trip he could recall.

In his death the profession loses one of the best and highest types of the modern physician, and the community a patriotic

citizen of wide general interests, keen business insight, high ideals, and open-handed generosity. Dr. Ross's earliest Canadian ancestors came from Scotland about 1780, and he was born in Toronto on August 16th, 1857, the son of Dr. James Ross, a leading practitioner of the city and a famous obstetrician. On his mother's side he belonged to the good old Highland family of Macintosh. His early education was received at the Model Grammar School and at Upper Canada College and he graduated at the University of Toronto in 1877. He then became a resident of the Toronto General Hospital, and in the following year went to London and joined the London Hospital in the Whitechapel Road, along with Dr. J. R. Jones (now of Winnipeg), and had the great good fortune to come under the immediate influence and into the services of two such stimulating and formative teachers as Dr. Hughlings Jackson and Sir Jonathan Hutchinson. Later he was to be found working with Gaule in Ludwig's laboratory in Leipzig, then with Grawitz in Virchow's laboratory in Berlin, and following Martin and Schroeder and Langenbeck in the wards, and attending service in the Court Chapel along with the Emperor and Empress and Von Moltke. Early in 1880 he is in Vienna taking instructions from Grüber, Schroetter, Ultzmann, Carl Braun, von Fernwald, Neumann, Fuchs, Pawlik, Billroth; then in Munich, Switzerland, Paris, and back in London, and then, before returning home, on a voyage to Ceylon and India. On returning to Toronto he first began practice as a specialist in laryngology, but soon abandoned that and joined his father in obstetrics and gynæcology. After Lawson Tait's visit to Toronto, Dr. Ross, Dr. Holford Walker and Dr. Neil McPhatter joined him in Birmingham in order to enjoy the benefit of his direct tuition and the advantage of his large clinical clientèle, from which all three derived great profit and became worthy disciples. From that time on gynæcology became Dr. Ross's *metier* and he a master of his art. Some time after settling down in Toronto he became attached to the staff of the Toronto

Dispensary, then a clinic of large proportions, and subsequently a member of the faculty of the Women's College, where the teaching of medical jurisprudence first fell to his lot, the department of gynæcology falling later into his hands. In 1897 Dr. Ross became associate professor of gynæcology in the University of Toronto, and succeeded to the chair, which he has since occupied, on the retirement of Dr. Uzziel Ogden in 1903. He was a brilliant, sympathetic, and enthusiastic teacher, and brought to bear upon his university work and its varied connexions the same impulsive energy and vim which he displayed in all the relations of life. For some years he was on the staff of the Hospital for Sick Children, to which institution he proved a faithful servant and a beneficent friend; and for upwards of twenty years a surgeon to Saint John's Hospital for Women, whose interests, professional and pecuniary, he did much to foster and sustain.

The Toronto General Hospital was always an object of his deep, personal regard, and he served it throughout with assiduity and skill in various capacities, and for some time before his death was chief of its gynæcological department and at one time chairman of its Advisory Board. During the critical period of its reorganization and the construction of the new hospital building, his counsel, wisdom and experience proved of inestimable value. At one time he served St. Michael's Hospital also, and had other eleemosynary associations too numerous to mention.

The Toronto Medical Society, the Pathological Society, the Clinical Society, and the Ontario Medical Library Association were all objects of his deep, practical interest and collaboration, and on their amalgamation in the Toronto Academy of Medicine he became first president, and, as a signal mark of appreciation of his labour and devotion, was elected to a second term. It is understood that a memorial meeting of the academy will be held in January next at which a due expression of its appreciation of his services and a detailed account of his contributions to medical literature, upwards of seventy-five in number, covering the whole range of ab-

dominal and pelvic surgery, will find fitting place and record. To select but one of these we may make mention of his article on Cæsarean and Porro-Cæsarean Section in Kelly and Noble's "Abdominal and Gynæcological Surgery." Dr. Ross also made occasional excursions into the field of general literature, and a few years ago published for private circulation a collection of his early efforts, viz.: letters to his family, giving in a very readable and entertaining form, the first impressions of a medical student in his *wander jahr*. In later years his tastes ran decidedly to books and pictures. He took his pleasures sensibly and seriously. In out-of-doors they were chiefly and seasonably riding, ofttimes to hounds, golf, fishing and shooting. Indeed, it is but a few weeks since he returned from his last duck shooting on Lake Manitoba. He had travelled widely on the continent of America, and the islands of the seas which wash its shores, in the British Isles and the continent of Europe, in Egypt, India and Japan, had brought back interesting collections and stores of useful knowledge, such as a man of keen and accurate observation and reflection would acquire, and so became a most interesting and instructive companion for all occasions. In his early days he played lacrosse with the Toronto Club, and served as a lieutenant in the Queen's Own Rifles.

He attended with great regularity the meetings of the Canadian and the Ontario Medical Associations, and of the American Association of Obstetricians and Gynæcologists, at whose gatherings he will be greatly missed, and he was an occasional attendant at the British and other medical associations, where he invariably created a good impression and made warm friends. From his father he inherited business abilities and aptitudes of no mean order, which qualities inured greatly to the advantages of the many unbusinesslike institutions to which he belonged, and of which his associates in real business were not slow to profit. He was a valued director of the Accident and Guarantee, and of the Manufacturers' Life Association, in which he also served as medical referee.

A life so full of interest and occupation, of opportunity and accomplishment, suddenly arrested in the heyday of its usefulness and enjoyment, was nevertheless laid down with a philosophic calm and resigned submission which does credit to our calling and attests the value of our training in opposing "free hearts, free foreheads" "to the sunshine and the shadow," and in meeting the last stroke of fate with equanimity. All honour to James F. W. Ross for his example, "living and dying."

We take our leave of him, husband, father, brother, friend, and confrère, in the old, time-honoured simple words:

Accipe fraterno multum manantia fletu
Atque in perpetuum, frater, ave atque vale,—

unmatched and immortal words which have borne the burden of the many sorrows of many generations in many climes and express the grief of all, but have a special meaning for each one who uses them, whether it be the overwhelming despair "of the poet's hopeless woe," as once in "olive silvery sirmio," or the buoyant resignation of St. Monica's last prayer for "Faith in God and union there;" and so once more, with disregard of scansion, *Vale, Frater, Atque, Ave!*

GENITAL TUBERCULOSIS

THE fourteenth German Gynæcological Congress, held at Munich from June 7th to 10th, discussed as the chief theme the relation of tuberculosis to the female genital organs. The discussion was opened by Jung, of Gœttingen, who stated that one and a half to two of all autopsies in females showed the presence of tuberculosis of the genitalia. This condition was usually hæmatogenous in origin, though it might arise from peritoneal extension after the breaking down of glands. It was seldom primary, and while a descending infection had been proven, ascending infection, while possible, had not been definitely proven, though extension by continuity could not

be excluded. The tubes were most frequently infected in this form of the disease, probably in ninety per cent. of the cases. The salpingitis could not be differentiated into acute and chronic. Healing had been noted, and occasionally bacilli had been found in the secretions, but in the majority of cases the infection was mixed. Tuberculosis of the uterus was usually an extension from the tubes, and attention was called to the cauliflower-like growth upon the portio-vaginalis of the cervix, which might be confused with carcinoma. The ovaries were rarely affected, probably on account of the thick surface covering, though a hæmatogenous infection of the ovary was not impossible nor was a similar infection of the vagina and vulva, which on account of the character of the epithelium usually escaped. Genital tuberculosis when present with pregnancy usually comes after impregnation, yet the two may occur together. The infection being hæmatogenous, the bacilli may get to the fœtus without showing definite change in their passage. Torn villi, extension from the placenta, nodes in the anion, may be seen. When tuberculosis is present there may be a miliary tuberculosis of the uterus post partum.

Veit spoke of the relation of tuberculosis to fertility. The influence of tuberculosis on menstruation and fertility varied with the extent of the disease, which, when extensive, leads to amenorrhœa. The association of tuberculosis of the lungs with dysmenorrhœa is frequent. Tuberculosis does not affect a pregnancy, and death during pregnancy is comparatively rare. Spontaneous premature labour occurs only when the condition of the patient becomes rapidly worse. The influence of pregnancy on the other hand is variable, and death may occur at the time of labour, or later. On the other hand, several pregnancies may be borne without serious influence. There can be no uniform rule, but on general principles tubercular females should not marry while the disease is active. Should they become pregnant, or if tuberculosis is first noted during the pregnancy, sanitarium treatment is the only hope.

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If when under treatment they fail to improve, lose weight, or show signs of bloody expectoration, the pregnancy should be terminated. The necessity of interference is not evident, except where there is a marked indication, and in the second half of the pregnancy is rarely advisable. Even in the first half of the pregnancy, if the disease is advanced, little gain can be expected from such procedure. The intrauterine transmission of tuberculosis is very rare as is also the possibility of inoculation at birth. Children of tubercular parents possess no immunity, and readily acquire the disease from their surroundings.

Krönig, of Freiberg, has met genital tuberculosis in about three per cent. of all females who came to autopsy, and in about ten per cent. of all chronic salpingiteids the tubercle bacilli are evident. Isolated genital tuberculosis is, however, practically unknown. There is little tendency to the production of miliary tuberculosis from a genital origin, nor is there a tendency to ulceration of the bladder or rectum. Peritoneal tuberculosis is not an extension from the genitalia, but is possibly of simultaneous origin from a focus elsewhere and propagated by the blood stream. In making a diagnosis palpation is of comparatively little value. Curettage of the uterus may be valuable in possibly half of the cases; a chronic salpingitis without leucocytosis is suggestive of tuberculosis. The Von Pirquet, Wolff-Eisner, and Calmette reactions are of practically no value, a contention borne out in an extended paper by Schlimport, nor is reliance to be placed on the subcutaneous injection of tuberculin. A later communication by Zoppritz bore out Krönig's contention. He believed that occasional good results were obtained by the continued use of injections of tuberculin. Kronig contended that there was no vital indication for operations as in general the health was rarely seriously affected from this variety of the disease. A radical operation was practically always contra-indicated, as a consideration of statistics showed that expectant and operative treatment had practically a like nortality. If

operation was resorted to it should be limited to resection of the tubes, and that only if the original focus of tuberculosis was obviously latent. The proportional relation of peritoneal and genital tuberculosis in male and female was more or less conclusively proved of hæmatogenous origin.

Bennecke, of Rostock, showed the possibility of descending infections by means of particles of metal and bacilli; he also proved that this might ascend by means of the lymph stream.

Menge had found the vaginal secretion bactericidal and that bacteria might affect the vulva with canalicular ascension. On the other hand, he had noticed tuberculosis of the uterus in a female guinea-pig, while allowing her to run with a male in whose seminal sac human tuberculosis had been injected.

Martin, from Bumm's clinic, reported twenty-six cases of total extirpation of the uterus for tuberculosis, and contended that one year was the limit of observation. He believed in doing anything to promote fat production, and suggested castration; this also prevented the loss of blood by menstruation, but the difficulty is in deciding which are suitable cases.

Christofoletti and Thaler had noted less resistance in guinea-pigs after castration and numerous other observers reported similar results.

Von Franqué, of Giessen, had noted the development of carcinoma in connexion with old tubercular lesions, and for this reason favoured operation.

Burckardt, of Basil, spoke of the frequency and import of the clincal evidence of lung tuberculosis to pregnancy, dealing with some seventy-two cases where there was undoubted involvement of the lung, and in six involvement of the larynx. All these patients went through the pregnancy and the puerperium without apparent change in the disease. The form and extent of the lesion is less important than whether it be stationary or progressive.

Pankow, of Freiberg, reported on two hundred and

twenty-two cases of pregnancy, complicated by tuberculosis of the lungs. Of one hundred and forty-five cases of manifest tuberculosis, there were seventy-seven in which the disease was latent. Of the patients in which the disease was manifest 20 per cent. dated the onset of their trouble to a previous pregnancy, amd believed themselves worse during the later pregnancy. He believed that the only treatment of pregnancy complicated by manifest tuberculosis, was abortion in the early months, though even those had shown a mortality of 1.5 per cent.

Von Bardelaben believed that old chronic pulmonary tuberculosis rarely adversely affected pregnancy, but that active tuberculosis was further exaggerated in 80 per cent. of the cases. He reported on eight hundred cases, of which only one hundred and sixteen required operation. Svoeckel reported fifty-two cases of undoubted tuberculosis of the lung and larynx with induction of labour, and favoured less radical treatment than many of the others.

Selheim laid down three rules: (1) Render the tuberculosis inactive before pregnancy. (2) If the tuberculosis is active, interfere early. (3) If inactive it may become active during pregnancy, and is always a source of danger.

LEOPOLD

TO a long list of losses to the gynæcological world in the past year—Pfannensteil, Runge, von Rosthorm, Chrobak, von Elisher, and Gustave Braun—must be added another, probably better known than the majority of these, Leopold of Dresden, who died September 12th, of an apoplexy. Leopold, the director of the Frauenklinik in Dresden, was born February 20th, 1846, the son of a physician. After the usual preliminary education he studied medicine at Leipzig, and on June 23rd, 1870, was admitted to practice, his dissertation being entitled "An investigation of the epithelium of the

ovaries and their relation to the ovum." Scarcely had he entered upon practice when the outbreak of war with France called him to the army. After the conclusion of the war, from Easter, 1871, to Easter, 1872, he made a tour of Breslau, Vienna, London, and Edinburgh. To this may possibly be ascribed that sympathy which has always existed between English and American physicians and this great gynæcologist. On his return to Germany he entered as assistant in the Pathological Institute, under Ernst Wagner, and from 1874 to 1881 confined his attention to private practice. From 1881 to 1883 he was instructor for midwives in Leipzig, and on June 24th, 1883, was called as director to the Frauenklinik in Dresden. Here his scientific and organizing ability soon brought to the front that institution famed in Europe above all others of a similar kind. Though unconnected with any German university the scientific spirit prevailed in a marked degree, and Leopold's contributions have always been looked upon as of the utmost value. His first work dealt with menstruation, pregnancy, and the puerperium, particularly the changes in the mucosa of the uterus. His largest work, which appeared in 1897, is entitled, "The Uterus and Child, and the Structure of the Placenta." Strongly interested in the question of contracted pelves, and particularly the scoliotic and kypho-scoliotic pelves, it is natural to find him interested in Cæsarean section, symphysiotomy, and premature labour, in fact any thing to do with the conduct of labour in contracted pelves. A strong upholder of Cæsarean section he condemned symphysiotomy, but was an ardent advocate of the newer hebosteotomie. Of late years, interested in the etiology of cancer, he became prominent as an advocate of the parasitic origin of this disease. Since 1892 he had been editor of the *Archives fur Gynækologie.*

Though famous as an instructor of post graduate physicians his chief work lay in the instruction of the Saxon midwives, and his relations with them may best be instanced by the fact that when the news of his death was borne to them

on the second day of the International Congress of Midwives, the entire Saxon deputation appeared in mourning. In 1873 he married Anna Marie Credé, who survives him. The German publications in the notices of his death bear witness to the fact that in his family relationships he was no less an example than in that side shown and known to the world.

ONTARIO

IT is evident that medicine has not lost its popularity as a profession in Ontario, and the classes in all the universities are as large, if not larger than ever; the University of Toronto leading with a first year class of one hundred and forty-four students: this too in spite of the raising of the matriculation standards.

The wonder is what is to become of these students when they graduate, and yet when the rapid growth of Canada is contemplated, it is evident that the supply will not be greater than the demand.

There is a feeling in university circles that in the near future the entrance standards must be raised still further, and it would not be surprising if in due course senior matriculation would be demanded.

When the newer provinces have established universities of their own, with properly equipped medical departments, it stands to reason that the eastern school will lose a marked number of students. More than ever then they must make their courses attractive to the best men if they are to flourish, and no doubt post-graduate work will also be developed as it has not been attempted in the past.

Then again there must be more opportunity for research. The best of the universities will welcome the day when their classes will be smaller, the students entering better equipped, and time found for the best kind of teaching.

Comforting as the Carnegie Report was, in regard to

medicine in Canada as a whole, yet it left the impression that even in the best circles greater things must be attempted in the early future—and now, that the council has stood aside, and said "gentlemen, go your own course and prove to us that you can accomplish all you profess to be able to do", it is evident that no university can afford to ignore the responsibilities thrust upon it. It is to be hoped, though, that the council will prove itself equal to the occasion, and really live up to its newly found ideals. If, for example, it allows any of the universities to curtail the session to six months, when an eight month session is demanded, it will furnish material for further severe criticism.

No one supposes that it will have favourites, or wink at infractions of the law. To the close observer it is evident that the council is going through a purifying process that augers well for the future of medical education in Ontario, and its very existence depends on its ability to keep to the paths of virtue. As is the case so often, the hope of the council is in its young blood.

THE QUEBEC COLLEGE

THE minutes of the semi-annual meeting of the College of Physicians and Surgeons of the province of Quebec, which was held on September 24th, is a naïve publication, but it is hard to know why the proceedings cost so much. The total receipts for the year are given as seventeen thousand dollars, and it cost two thousand dollars to audit the books. The auditor, however, appears to be a careful person for he affirms in his report that "the balance sheet is as correct as possible."

Salaries and bonuses account for thirty-six hundred and forty dollars. The governors received in fees and expenses over fifty-five hundred dollars. The judicial costs amounted to more than twenty-five hundred dollars; and there was a "general expenditure" of thirty-one hundred

dollars, in which are included two hundred dollars for "drafting rules," and four hundred and thirty-eight dollars for "sundry expenses." The item for stamps, namely, three hundred and sixty-two dollars, would imply that over eighteen thousand letters were written.

Half a page of the report is devoted to a communciation from an applicant for a license; and the only reasons he puts forward are that he practices in the United States, that he is the father of a large family, and that he wishes to come back to his native country. It appears that these grounds were considered good by the Council, for it is stated on page 22, "we recommend that he be sworn in this very day."

The following page is occupied by an application from a candidate, that he be allowed his "brevet in Letters," although he had failed at the examination in September. He puts forward the rather curious reason, "that the length of the questions and the scarcity of time I had to devote to them, was the cause of my defeat."

There is a pathetic appeal from the widow of a licentiate, that the fifty dollars which he paid for his license be returned, as "he only practised for fourteen months, married only since eleven months, and the father of a family since two weeks, and all is over." Another appeal for a "brevet in Sciences" is based on the ground that ever since 1909 the applicant had "tried said sciences in vain," and that if it were not granted he "should be obliged to abandon the profession that he had begun to study." To this is appended the summary comment, "refused." The Council was more complacent towards another unfortunate man, "who having stood a trial before the Court of King's Bench (criminal side), of this province, is said to be have found guilty and sentenced to two years in the penitentiary for criminal negligence." By a formal motion he was allowed "to present a private bill before the Provincial Legislature in order that his name be reinstated on the medical register of this province." And this was in the face of a legal opinion to the contrary, although the adviser

of the council did go so far as to admit that, had the applicant "not been sentenced to penitentiary, the case would be quite different." Finally, we cannot affirm that the amount of three hundred dollars for "translation? reports, etc." was wisely expended.

THE WELL OF TRUTH

WHAT is truth in therapy? Surely it lies deep. In the October number of the JOURNAL an elaborate review was made of some recent papers upon the heart; and citations were made from an article by Boos and Lawrence in the *Interstate Medical Journal*, which rather deprecated the use of one of the newer remedies, known as digalen. The manufacturers of this preparation have been good enough to furnish us with a list of authorities controverting the opinions of the authors from whom we quoted. Amongst these are :

Gazz. degli Ospendali e delle Cliniche, July 1907, No. 83; *Medizinische Klinik*, No. 21, 1907; *Medical News*, No. 18, 1905; *Deutsche Amer. Apoth. Zeitung*, 1910; *Journal A.M.A.*, February 18th, 1911, p. 511; *These de Lyon*, 1907; *These de Paris*, 1906; *Berliner Klin. Wochens*, No. 51, 1904; *Budapesti Orvosi Ujsag*, No. 47, 1906; *Nochtrag zu den verhandlangen des XV II Kongresses fur Innere Med.*, 1899; *Fortschritte der Med.*, No. 28, 1905; *Deutsche Med. Wochens*, No. 35, 1905; *Gazette des Hopitaux*, No. 19 and 20, 1907; *Therap. der Gegenwart*, May, 1907; *Med. Klinik*, No. 21, 1907; *Zentralblatt jur innere Med.*, No. 44, 1905; *Jahrbuch der prak. Med.*, 1905; *Nuova Rivista Clinico terap.*, No. 7, 1905; *American Medicine*, December, 1906; *Prager Medizin. Wochene*, No. 4, 1906.

The manager of the "propoganda department" of this firm has set forth in one column the opinions of the authors whom we quoted, and in another the contradiction of them in quite specific terms. We have made no attempt to verify these citations; that can easily be done by any one who is

sufficiently interested in the subject. Quite apart from the interests of any given manufacturer, it is important to the profession to know the truth about any new preparation, since, whether we like it or not, the filling of prescriptions has passed into the hands of manufacturers; and the druggist who used to compound with the familiar mortar and pestle, is now merely an agent for dispensing the finished article, with which he is furnished. It is also to the interest of the profession, which is always indentical with that of the patient, to hear, and really know, of any new thing.

THE officers of the Canadian Medical Association desire to make an appeal to all members of the Association for their coöperation in the work of increasing the membership. The JOURNAL of the association has now been published for one year, and it is generally admitted that it has more than justified its existence. Nevertheless the number of members in the association is still much below what it might well be. If each member who, *ipso facto*, is also a subscriber to the JOURNAL, would endeavour to secure in his neighbourhood, one or two new members for the association, the total membership list would very soon be increased in a most gratifying way. Communications may be addressed to Dr. Edward Archibald, general secretary, 160 Metcalfe Street, Montreal.

THE trail of the serpent has already reached the unfortunate sufferers from syphilis, who have been hoping for relief from Ehrlich's discovery of "salversan." Advertisements are appearing in the newspapers urging the afflicted ones "not to be experimented upon, but to call and consult" this or that medical institute. One of the most offensive of these advertisements is issued from Toronto. The name and address of the consultant, and his qualifications are clearly set forth; and a correspondent asks, "Can anything be done to prevent this kind of thing?" Not much, we fear, so long as folly is an ingredient of the human mind.

Book Reviews

DISEASES OF THE NOSE AND THROAT, comprising affections of the trachea and œsophagus. A text-book for Students and Practitioners. By ST. CLAIR THOMSON, M.D., F.R.C.P., F.R.C.S., Physician for Diseases of the Throat and Professor of Laryngology in King's College Hospital, 791 pages with 18 plates and 294 figures in the text. London, Cassell & Co., Ltd. Toronto, D. T. McAinsh & Co., 1911. $7.50

The better English books all have a literary quality, and without that quality no book, even upon medicine, has survived. This is saying nothing more than that a book must be a book. This volume of St. Clair Thomson's falls into that class and opens with a nice quotation from Osler: "To study the phenomena of disease without books, is to sail an unchartered sea, while to study books without patients is never to go to sea at all"; and one from a French writer in which the true position of a "specialty" is defined as the lowest, when it is not fertilized by general knowledge, but the perfection when it is the fulfilment of science. The book is, as the title page indicates, for students and practitioners as well; but the specialists will probably agree that if the persons for whom it is designed made proper use of it, there would be a restricted field for the operation of the specialists themselves. Finally the book gives pleasure to the hand and to the eye.

MANUAL OF PRACTICAL HYGIENE. For Students, Physicians, and Health Officers. By CHARLES HARRINGTON, M.D., late Professor of Hygiene in the Medical School of Harvard University. Fourth edition, revised and enlarged by MARK RICHARDSON, M.D., 850 pages, illustrated with 12 plates and 124 engravings. Lea & Febiger, Philadelphia and New York, 1911.

A melancholy interest attaches to this book as it recalls the untimely death of Dr. Harrington in England in 1908. He had been preparing the fourth revision of his work when the end came, and the work has been completed by Dr. Richardson, who is secretary to the State Board of Health of Massachusetts. One turns instantly to the section on sewage disposal as that is perhaps the most important task with which hygiene has to deal. We find

that this section is dealt with by Mr. H. W. Clark whose work at the Lawrence Experiment Station is so well known to all persons interested in the public health. In the very perfection to which sewage disposal has reached, lies its danger, because it is assumed that rivers into which sewage is habitually discharged may without further precaution be used for drinking purposes. The book in its present form is a faithful index of the present state of knowledge and opinion upon the important question of the public health.

GYNÆCOLOGICAL SURGERY. By COMYNS BERKELEY, M.A., M.D., and VICTOR BONNEY, M.S., M.D. 750 pages, 392 figures, 16 coloured plates. London, Cassell and Company, Ltd. Toronto, D. T. McAinsh & Co., 1911. $6.00.

If any book could make a surgeon, then all practitioners who own this book would be qualified to perform operations upon women. This is more than can be expected or even desired. The value of the book which is concerned wholly with the operative field of gynæcology seems to lie in this, that is a record of the methods personal to the authors, based upon experience during many years of service at the Middlesex Hospital and the Chelsea Hospital for women. It may also be taken, the authours say in the preface, as reflecting the practice of the school of gynæological surgery to which they belong. The figures in the text are from drawings by Mr. Bonney, and there are in addition sixteen coloured plates by G. Dupuy. All of these are very beautifully done, and the text is displayed with taste and distinction. The introductory remarks are full of wisdom and might well be taken to heart by all surgeons. The authors offer sound comment upon the bearing of the surgeon, speed in operating, harmful manipulation, and the use of an excessive number of instruments which require for their conveyance "a bag resembling a seaman's chest"; or, on the other hand so limited an equipment "that it can be carried in the trousers pocket." Then follows a description of the instruments employed by the authours, of their methods of sterilization, of tying knots, of their ligatures and dressing, of their drainage and their preservation of specimens. In Chapter III the operating theatre and its appointments are described, and the artist gives rein to his fancy in depicting a scene at the table. It makes one wish that all women wore nurse's garb. Through the first five chapters, sprinkled as they are with little pleasanteries and wise maxims, one follows easily. No doubt a gynæcological operator will find the remaining chapters even more interesting.

CURRENTS OF HIGH POTENTIAL OF HIGH AND OTHER FREQUENCIES. SECOND EDITION. BY WILLIAM BENHAM SNOW, M.D. Published by the Scientific Authours' Publishing Co., 329 West 57th Street, New York. Price, $3.00 net.

This work has been revised and enlarged. Forty cuts have been added, and the chapters on high frequency currents and therapeutics have been entirely rewritten. The work contains the results of the author's personal researches and investigations, and includes most that is valuable on the subject of high potential currents. The developments in the subject of hypertension and its treatment by the d'Arsonval current in the treatment of infection, has been thoroughly considered.

Books Received

The following books have been received, and the courtesy of the publishers in sending them is duly acknowledged. Reviews will be made from time to time of books selected from those which have been received.

NOSTRUMS AND QUACKERY. BASED ON ARTICLES ON THE NOSTRUM EVIL AND QUACKERY IN *The Journal of the American Medical Association*, WITH ADDITIONS AND ELABORATIONS. PART I, QUACKERY. PART II, NOSTRUMS. PART III, MISCELLANEOUS. First Edition. Cloth. Price $1.00; with individual's name on cover, 25 cents extra. Pp. 509, with 220 illustrations. Chicago: American Medical Association, 535 Dearborn Avenue.

THE SENSIBILITY OF THE ALIMENTARY CANAL. BY ARTHUR F. HERTZ, M.A., M.D., F.R.C.P., Assistant Physician and Physician in Charge of the Department for Nervous Diseases, Guy's Hospital. 83 pages (1911). Price $1.50. London: Oxford University Press. Toronto: D. T. McAinsh & Co.

DISEASES OF THE NOSE AND THROAT. BY ST. CLAIR THOMSON, M.D., F.R.C.P., F.R.C.S., Physician for Diseases of the Throat and Professor of Laryngology in King's College Hospital, London. 791 pages, with 18 plates and 294 figures in the text (1911). Price $7.50. London: Cassell & Co. Toronto: D. T. McAinsh & Co.

XUM

Retrospect of Medicine

THE PHARMACOLOGICAL ACTION OF TINCTURE OF DIGITALIS PURPUREA, WITH SPECIAL REFERENCE TO THE MODE OF PREPARATION AND THE EFFECT OF AGE. BY P. MORAN, M.D. (Vict.)., *Medical Chronicle*, October, 1911.

THE first part of this research was undertaken in order to ascertain whether tinctures made from the various parts of the digitalis plant possessed any pharmacological activity, and if so, to find out by physiological experiments how these tinctures compared with a good tincture made according to the British pharmacopœia.

The second part of the work was done in connexion with old tinctures of digitalis, which were made several years ago by well known firms of manufacturing chemists. The idea was to compare the present pharmacological activity of these tinctures with that of a good tincture made recently and also to compare their present activity with that they possessed when freshly prepared. Subsequently the writer received two other tinctures of digitalis: one was made twenty-seven years ago and the other nineteen years ago, and he tested these to see if they had any activity.

The conclusions at which Dr. Moran arrived are in his own words as follows :

1. TINCTURES MADE FROM FRESH LEAVES. The most active of the three tinctures employed is the one made from 1909 fresh leaves with 77 per cent. alcohol. This tincture compares very favourably with the standard tincture, and when freshly prepared it would probably have been quite as active as the standard tincture.

The tincture made with 68 per cent. alcohol and 1 in 20 fresh leaves, 1910, is more effective than the tincture made with 41 per cent. alcohol and 1 in 8 fresh leaves. From this I should conclude that the greater the percentage of alcohol used, the more active is the tincture. The explanation of this may be due to the fact that digitoxin is soluble in alcohol but insoluble in water, and the stronger alcohol probably extracts a greater quantity of digitoxin. It is quite possible that a very efficient tincture might be made by using 90 per cent. alcohol, for the reason just given, and it would have the further advantage of preventing enzyme action taking place.

2. Tincture Made from Flower Heads. According to the results obtained it would appear that this tincture is more active than the standard tincture. This is probably owing to the greater digitoxin yield of the flowers as shown by Fromme. If the tincture gave as good clinical results as a B.P. tincture then it might be advantageous to use such a tincture.

Tinctures of digitalis are occasionally found to possess very little activity, and in some cases this is due to the fact that the leaves used in the manufacture of the tincture have been adulterated or the leaves may perhaps have been plucked at any season and state of the plant's growth. This would not be liable to occur if the flower heads could be used, as the flower of digitalis purpurea is quite distinctive and the plant only flowers biennially.

3. Tincture Made from Fresh Root. The tincture does not show the tonic effect characteristic of a good tincture and therefore could not be classed as effective.

4. Tinctures Made from the Seeds. The defatted tinctures are capable of producing a tonic effect only, and there is no slowing of the heart. I consider that these tinctures are quite inactive as regards a characteristic digitalis action.

This tincture might possibly be of service clinically, in those cases where it is required to increase the tone of the heart's action without producing any slowing of the rate of beat.

The non-defatted tincture possesses some activity. Its action appears to be due to a saponin (digitonin). Digitonin is not an inert saponin, but the results obtained do not indicate that the tincture should be employed in the treatment of heart disease.

Although some observers state that the seeds of the digitalis plant are more active than the leaves, the results of my experiments with the tinctures do not bear out the statement.

From the experiments performed it was shown that all the old tinctures showed some signs of activity, as they were all capable of arresting the heart in systole.

1. *The* 1906 *tincture, made from* 1905 *leaves*, is a very active tincture, and, judging from the results obtained, there does not appear to have been much deterioration, although the tincture is more than four years old.

2. *The tincture made in* 1906 *from* 1906 *leaves* was less active than the above tincture. It certainly gives a digitalis action, but at the present time possesses only a little more than half of its original activity.

3. *The physiologically standardized tincture*, 1905, appears

to have deteriorated considerably, although it was more active than the 1906 tincture four years ago.

All the above tinctures give a very good tonic effect, but the slowing properties have diminished in each case.

If we can accept the supposition that digitoxin is the most active constituent of digitalis, then it would appear that digitoxin is decomposed by age.

Schmiedeberg states that when preparations of digitalis become acid the digitoxin is split up and probably this change has taken place in the old tinctures, for, on testing them I found that they gave a markedly acid reaction to litmus.

4. *The tincture made in* 1887 *did not* give the tonic effect and slowing. Its activity was in all probability due to the saponin present.

5. *The tincture made from the* 19 *year old extract* gave a typical saponin effect.

I should consider that the last two tinctures are quite ineffective for clinical use. They are capable of arresting the heart in systole due to the action of the saponin present, and digitalis itself also arrests the heart in systole. Therefore it follows that a tincture, rich in digitonin, might answer the test of a good tincture when standardized by the present method in which the minimum lethal dose is determined. Thus it is all the more important to be able to observe the effect produced by the drug before the arrest of the heart takes place.

My results lead me to conclude that a tincture made by a reliable firm of chemists, from carefully dried leaves of good quality, should retain its activity for two or three years. Furthermore, if the tincture was made with 90 per cent. alcohol, its keeping properties might be greatly improved.

News

PUBLIC HEALTH ASSOCIATION

THE first annual convention of the Canadian Public Health Association will be held in Montreal on December 13th to 15th. The business meetings and sessions will be held in the new medical building of McGill University, and the official opening will take place in the hall of the Royal Victoria College on the evening of the thirteenth. The programme will consist of three general sessions at which papers dealing with public health matters of general interest will be read and discussed, and of sectional meetings for the discussion of sanitary problems of technical interest to the medical health officer, the engineer and architect, and the sociologist. Members of the Canadian Medical Association, who are interested in public health matters in Canada, are cordially invited to attend the convention. The programme of papers is published in the *Public Health Journal*, which is the official publication of the Association.

THE annual banquet of the Oxford County Medical Society was held at the Mansion House, October 27th. The guest of the evening was Dr. Walter B. Geikie, late dean of Trinity Medical College and the only living colleague of the Hon. Dr. Rolph, the founder of the first medical school in the province of Ontario.

DR. G. H. GIBB, who has been practicing at St. Mary's for the last eleven years, has left for Mitchel to begin a practice there.

THE formal opening of the new premises of the Toronto Academy of Medicine took place October 27th. The presidential address was given by Dr. N. A. Powell. The academy was formed five years ago by the amalgamation of four separate bodies: the Toronto Medical Society, the Clinical Society, the Pathological Society, and the Ontario Medical Library Association. The academy's new premises cover a lot 264 feet by 107, with room for its meetings, its library, and its growth generally. Dr. Osler described the site as the finest location for a central home of the profession in any city of America. The officers of the academy are Dr. N. A. Powell, president; Dr. A. A. Macdonald, past president;

Dr. R. A. Reeve, vice-president; Dr. Harley Smith, secretary; and Dr. W. A. Young, treasurer.

THE annual dinner of the medical faculty of Queen's University was held at the Frontenac Club on Thursday, November 2nd. Dr. A. R. B. Williamson acted as chairman of the evening. Principal Gordon and the house surgeons at the hospitals were guests of the faculty. The members of the faculty who delivered addresses were: Drs. Etherington, Kidd, Mylks, Young, W. T. Connell, MacCallum and Ryan.

AN amendment to the Public Health Act in the province of Saskatchewan has recently been passed regarding the management of hospitals in that province: "Hospitals having an authorized bed capacity of seventy-five beds or over shall employ a resident medical superintendent. The change thus provided for will apply to the Regina Hospital, the New Grey Nuns' Hospital, Saskatoon General Hospital, and all other similar institutions in the province coming under the regulations."

DR. J. C. HENDERSON has been appointed medical health officer for the municipality of Chilliwack, B.C.

A NEW municipal hospital is being erected in Strathcona and the plans, after having been submitted to the physicians of the place, received approval.

DR. W. J. BRUCE, of Kincardin, is suffering from the results of an accident by which he fractured his leg.

DR. W. L. PIRT, of Carman, Man., was killed in an automobile accident on October 31st. He was a son of the late Martin Pirt, of Morden, Man., and was in the forty-seventh year of his age.

THE annual meeting of the Elgin County Medical Association was held on November 3rd, in St. Thomas. The election of officers resulted as follows: Dr. A. B. Riddell, of Bayham, president; Dr. Patterson, of Rodney; Dr. McEwen, of Aylmer; Dr. A. Leitch, of St. Thomas, vice-presidents; Dr. P. O. King, St. Thomas, secretary; Dr. C. E. B. Duncombe, St. Thomas, treasurer; D. Cameron, Dutton; Dr. C. Sinclair; Dr. Leeson, Aylmer, executive committee. In the evening the annual banquet of the St. Thomas Medical Association was held, at which Dr. A. Leitch presided.

ADVERTISEMENTS are appearing in the Toronto papers for a physician-in-chief of the isolation hospital. Applications addressed to H. A. Rowland, chairman of the local Board of Health, will be received up to and including December 1st, and should contain the qualifications and references of the applicants.

A MEETING of the Central Alberta Medical Association was held in Edmonton on November 2nd. The principal matter of discussion was the arragnements for the meeting of the Canadian Medical Association in 1912. It had been arranged that the meeting should be in session for two days in Edmonton, and then should adjourn to Calgary. This proposal it appeared, did not meet with favour as the members of the profession in Edmonton desired that all the sessions should be conducted in that place.

REPORTS from British Columbia indicate that the serious epidemic of typhoid fever, which threatened to interfere with the work in the construction camps of the Canadian Northern Railway along Kamloops Lake has, by the prompt action of the provincial health authorities, been checked. The camps along the North Thompson are reported in a satisfactory condition and the accommodation in the hospitals along the construction line is considered ample.

THE Ottawa Medical Society has elected the following officers for the ensuing year: President, Dr. Omer Wilson; 1st vice-president, Dr. C. W. F. Gorrell; 2nd vice-president, Dr. Campbell Laidlaw; secretary, Dr. Neil MacLeod; assistant secretary, Dr. Geo. P. Howlett; treasurer, Dr. J. H. Alford; council, Drs. A. T. Shillington, J. C. Caskey, J. D. Courtenay, F. McKelvie Bell, and Arthur McLaren.

THE annual report of the Royal Victoria Hospital at Barrie has been issued. The number of patients treated druing the year was 352, and the days of treatment, 7,552. The improved accommodation provided by the Strathy memorial wing has been of great value to the patients as well as convenient to the staff. From the financial statement it appears that the average cost of maintenance of a public patient is $9.45 per week.

IN a letter written by Dr. J. W. Pearson, chairman of the Vancouver Medical Association, to Mayor Taylor, the recom-

mendation was made that a board of six members be elected by popular vote, in the same manner as members of the park board are chosen, three members to be medical men and three members non-medical men, the mayor to be ex-officio member of the board. The recommendation is that these members be chosen for terms of three years each, two going out each year. This board, the association recommends, shall have the powers of the present health and relief committee of the city council, with enlarged powers. Among the reasons stated in support of the change it is claimed that a board so chosen would command the confidence and co-operation of the people.

Obituary

Dr. Alexander Pringle died in Cornwall on October 25th, in the fifty-ninth year of his age. He was a son of the late Judge Pringle of Cornwall and had practised for many years in Northfield, Minnesota. At the time of his death he was on his way home from England where he had been for several months seeking rest, after having suffered from an accident in a motor car.

Dr. Charles James Morse, of Amherst, N.S., died suddenly of heart failure, October 22nd, 1911. Dr. Morse was born in Amherst, February 10th, 1840, where he received his early education. He began the study of medicine with the late Dr. Benjamin Purdy, after which he entered Edinburgh University, from which he graduated in 1862 with high honours. After graduation he commenced to practice at Amherst, but in 1875 he removed to Montreal. On the death of his father in 1878 he returned to Amherst. Dr. Morse was the son of the late Hon. James Morse, for many years prior to Confederation a member of the Legislative Council at Halifax. His great grandfather was one of the original settlers of Cumberland and was at one time the officer in command at Port Cumberland. The late Dr. Morse for many years enjoyed a large practice in Amherst and for the last three years was the medical officer for Cumberland County.

Dr. William Stephenson, of Virden, Man., died October, 1911, of typhoid fever.

DR. HANS STEVENSON, of Wakefield, Que., died November 4th, in the fifty-ninth year of his age. He is survivied by a widow, six daughters and one son. Death was due to heart failure and came suddenly. He was a son of the late Thomas Stevenson, one of the early settlers in the Gatineau Valley.

DR. J. E. TYNDALL, a well known physician of Brandon, died from pneumonia on October 30th. The late Dr. Tyndall was forty-seven years of age, was born in York County, Ontario, and was a graduate of the Toronto Medical College. He madel his fina studies in the Manitoba Medical College. He has practiced medicine for twelve years, and for the last five years in Brandon.

DR. WILLIAM STEVENSON, of Virden, Man., died October 16th. Dr. Stevenson graduated in medicine from the Manitoba Medical College in 1894, and after spending some time in post-graduate work in England located in Virden, where he practised until his death.

A CABLE message announces the death of Dr. W. C. Little, formerly of Toronto, and at the time of his death practising at Warracknabeal, Australia. Dr. Little was a graduate in medicine of Queen's University.

DR. CHARLES JAMES MORSE, of Amherst, N.S., died October 23rd. Dr. Morse was born in Amherst in 1840. He received his medical education at Edinburgh University, graduating from that institution in 1862. After practising for some time in Montreal, Dr. Morse returned to Amherst, where he spent the remainder of his years.

DR. ALEXANDER HUGH FERGUSON, formerly in practice at Winnipeg, died at his home in Chicago, October 20th. Dr. Ferguson was born in Ontario and received his medical education at Trinity College. After graduation he went to Winnipeg, where he practised until 1894, when he removed to Chicago to take a part in the work of the Post-Graduate Medical College of that city. Dr. Ferguson at the time of his death was president of the Chicago Medical Society. He is well remembered in Winnipeg for the interest he took, and the work he accomplished, in incorporating the Manitoba Medical College.

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Canadian Literature

Original Communications

The Canadian Journal of Medicine and Surgery, October, 1911:

The Practical Value of Lip-reading . Max A. Goldstein.
Differential Diagnosis and Operative Treatment of Right-sided Salpingitis and Appendicitis . . . . . S. M. Hay.

The Canada Lancet, October, 1911:

The Phenol Sulphonephthalein Test for Estimating Renewal Function . . L. G. Rowntree and J. T. Geraghty.
Surgical Diagnosis of Kidney and Bladder . . . . . J. K. McGregor.
Removal of Calculus from Pelvic portion of Ureter . . . . . S. M. Hay.

Dominion Medical Monthly, October, 1911:

Headache and Heterophoria . . . G. Sterling Ryerson.
Torsion of the Pedicle of an Ovarian Cyst . . . . . E. R. Secord.
Hospitals for Inebriates . . . A. M. Rosebrugh.
Infectious and Contagious Diseases . D. McPherson.

L'Union Medicale du Canada, October, 1911 :

Etat actuel de nos connaissances sur le traitement de la syphilis; la derniere facon d'employer le 606 . . Gustave Archambault.

Dominion Medical Monthly:

Headaches and Heterophœia . . G. Sterling Ryerson.
Torsion of the Pedicle of an Ovarian Cyst . E. R. Secord.
Hospitals for Inebriates . . . D. McPherson.

Canada Lancet:

Report of Two Cases of Sexual Precosity . Henry J. Machell.
Membranous Pericolitis . . . Ernest A. Hall.
Presidential Address. Academy of Medicine, Toronto . . . . . N. A. Powell.
The Nature and Treatment of Bronchial Asthma . . . . . Robert D. Rudolf.
Passing of the Druggist's Vocation . . John Hunter.
Success in Cataract Operations . . W. M. Brown.
Nasal Accessory Sinuses . . . Lee M. Hurd.

The Canadian Journal of Medicine and Surgery:

Presidential Address. The Academy of Medicine, Toronto . . . . . N. A. Powell.
The Wassermann Reaction, with a Report of 300 Tests . . . . George E. Strathy.
Chronic Constipation . . . . . S. H. McCoy.
The Causation of Bronchial Breathing in Disease . . . . . G. S. Young.
Two Cases of Phlegmonous Enteritis . L. W. Cockburn.

L'Union Medicale du Canada:

Le Traitement Biologique Antituberculeux . Eugene Grenier.
La Legue Antituberculeuse a New York . J. E. Dubé.

Western Canada Medical Journal:

Autotoxicosis . . . . . J. Proctor Hall.
Clinical Memorande . . . . . T. Lachance.

Medical Societies

THE OTTAWA MEDICO-CHIRURGICAL SOCIETY

The Ottawa Medico-Chirurgical Society held a regular meeting on October 20th, 1911. There were thirty members present, and the following programme was submitted :

1. Infant Feeding. Discussed by Dr. Shirreff, Dr. Small, Dr. Gibson, Sir James Grant, Dr. Argue, Dr. Flegg, Dr. McK. Bell, Dr. Valin, Dr. Hagar, Dr. Quin, Dr. Lyman.
2. Reports of Cases. By Dr. McElroy and Dr. Valin.
3. Pathological Specimens. By Dr. Lyman.

TORONTO ACADEMY OF MEDICINE

On Tuesday, October 31st, the Academy was addressed by Dr. C. N. B. Camac, of New York, on the subject of "The Out-patient Clinic." Dr. Camac traced the history of his subject in a most interesting way. The first dispensary was established in 1687, and in 1696 a public subscription list included many great names. Under the original system, physicians prescribed for the poor without charge. The important question, "Who are the poor?" arose then as now and abuses were feared. Comic poems were written on the subject by Pope and others. "The Dispensary," by Sir William Garth, is an important historical landmark.

Since earliest days, medical and economic objections have been urged against the dispensary system. The argument was used that it was a money making scheme: that the public were pauperized; that they were cheated by indiscriminate drugging. Some of these objections have still some foundation and attempts have been made to minimize evils which are occasionally apparent. A New York law to prevent, under penalty, people of means attending free clinics has proved unavailing.

Dr. Camac emphasized the present-day importance of "Out-door" work. He thought that the equipment of a dispensary should be quite equal to that of a general hospital A good clinical labratory was essential and hardly less important was the keeping

of complete medical records of all cases "Rounders," the pests of all hospitals, could be easily dealt with if each hospital had access to the other hospitals' records. The hospitals should coöperate to keep one another informed in such matters. Affiliation of hospitals with medical schools is necessary and should be sought by the hospitals. Patients, if properly treated, do not object to acting as clinical material.

The speaker sketched the various needs which a dispensary should meet in a large city. Work of three varieties should be undertaken: (1) medical and surgical; (2) tuberculous; (3) Social service. Under the first heading came usual routine work. The other two included the foundation of "day camps," visiting indigent persons in their homes. The dispensary proper should pay its own running expenses. A small charge should be made for each dressing or prescription. This would result in an adequate yearly income, while "districting the city," as in Paris, would prevent reduplication of expensive apparatus in various hospitals. Work among tuberculous patients and social service work should be under separate endowment. Among those who discussed Dr. Camac's paper were President Falconer, Mr. Flavelle, and Drs. Macdonald, McPhedran, and Primrose. A vote of thanks was moved by Dr. Ferguson and seconded by Dr. P. Scott.

Dr. Thomas McCrae will address the Academy on Tuesday, December 5th.

A large at-home was held in the Academy Building at 13 Queen's Park, on October 31st, and proved a very agreeable substitute for the formal opening ceremony.

MONTREAL MEDICO-CHIRURGICAL SOCIETY

THE third regular meeting was held November 3rd.

PROGRAMME.

Pathological specimens, series by L. J. Rhea.

Pathological specimen with Skiagraph, two cases of Hypernephroma, Wm. Hutchinson.

Demonstration, a simple device useful in the treatment of acute facial paralysis, C. K. Russell.

Exhibits, (1) "A Portable *x*-ray, High-frequency, D'Arsonval,

and Diathermy Apparatus"; (2) "A modification of the Pirie stereo-glass, for *x*-ray stereoscopic pictures," R. Wilson.

Paper, The Mechanism of Life, illustrated by lantern slides, G. P. Girdwood.

Case report with specimen, castric ulcer, J. Alex. Hutchinson, L. J. Rhea.

PATHOLOGICAL SPECIMENS.

1. Metastatic carcinoma of the liver, spleen and adrenals from a case of carcinoma of the breast, with multiple metastases. Female, age fifty-five, twelve years ago a mass appeared on the right breast, followed four years later by a similar mass in the left breast. The axillary glands were enlarged and firm. Spleen and liver were enlarged. Ascites, jaundice, and cerebral symptoms.

2. Perforated carcinoma of the stomach, general peritonitis, stone in the systic duct and hydrops of the gall bladder. Male, aged seventy-three, entered the hospital with fracture of the humerus. Patient was very anæmic. Gastric analysis showed no free Hcl. Low acidity, lactic and butyric acid. On several occasions his temperature went to 103°, and his leucocyte count as high as 55,000. In the course of four days the temperature would drop to normal. There was some rigidity of the abdomen. No history of gall stones. Death from general peritonitis.

3. Acute cholicystitis, ulcers of the intestines, and sub-mucuous hemorrhages of the urinary bladder in a patient with typhoid fever. Male, aged twenty-two. Typhoid bacilli obtained by blood culture. The course of the disease was marked by cerebral symptoms, considerable abdominal distension, and symptoms of severe toxæmia.

SYNOPSIS OF PAPER

Osmotic growths. Osmosis, diffusion, as forces controlling of the changes taking place in life, and the production of natural forms. The production of forms found in living animals by the action of physical agency in non-living matter. The paper was illustrated by lantern slides and preparations, and by demonstrations of the actual process.

WINNIPEG MEDICAL ASSOCIATION

AT a meeting of this Society held October 7th, the following officers were elected: president, Dr. H. P. Halloway; 1st vice-presi-

dent, Dr. S. J. Elkin; 2nd vice-president, Dr. J. Halpenny; secretary-treasurer, Dr. A. J. Burridge; executive committee, Drs. A. E. Coulter, S. W. Prouse, Charles Hunter and James Hamilton.

LUNENBURG—QUEENS MEDICAL SOCIETY

A MEETING of the society was held at Liverpool on Thursday, October 12th. The president, Dr. J. W. Smith, of Liverpool, was in the chair and the programme was as follows: 1. Presidential address, "The Benefits of Local Medical Societies." 2. Discussion of the formation of central committees for all the local provincial societies. 3. Action on the relation between professional and fraternal organizations. After the meeting the president gave an informal dinner to the visiting members.

WESTERN UNIVERSITY MEDICAL ALUMNI ASSOCIATION

THE annual meeting of this association was held on October 18th in London, Ont. Dr. Hoover, of Western Reserve University, Cleveland, and Dr. Armstrong, of Montreal, were the lecturers at the afternoon session. The officers elected for the new year are president, Dr. J. B. Kennedy, Wingham; vice-president, Dr. H. A. McCallum, London; secretary-treasurer, Dr. Spence, London; executive, Drs. Arnott, Spence and Weekes, London.

NIAGARA DISTRICT MEDICAL ASSOCIATION

THE regular meeting of this association was held in Welland, October 9th, with the following members in attendance: Drs. Sheehan, Sutherland, Wilson, Kellam, McDonald, Taylor, Greenwood, Old, Shultis, J. M. Dalrymple, Howell, Colbeck, Garner, Binns, Rigg, Davis, McBride and Campbell. Dr. Howell, the president, occupied the chair, Dr. Davis was elected secretary of the association in place of Dr. Walker, who has moved from Niagara Falls to Toronto. The guest of the society was Dr. Rudolf, of Toronto, who read a paper on the "Symptoms and Treatment of Asthma."

Medical Societies

CANADIAN MEDICAL ASSOCIATION:—President—H. Goodsir Mackid, Calgary. Secretary—Dr. Edward Archibald, 160 Metcalfe Street, Montreal

ACADEMY OF MEDICINE, TORONTO:—President—Dr. A. A. MacDonald. Secretary—Dr J. G. Fitzgerald.

ASSOCIATION OF MEDICAL OFFICERS OF THE MILITIA:—President—Major E. A. LeBel, A.M.C. Secretary—Captain T. H. Leggatt, Ottawa.

BRITISH COLUMBIA MEDICAL ASSOCIATION:—President—Dr. R. W. IRVING, Kamloops. Secretary—Dr. A. S. Monro, Vancouver.

BRITISH MEDICAL ASSOCIATION, HALIFAX AND NOVA SCOTIA BRANCH —President—Dr. Arthur Birt. Secretary—Dr. K. A. Mackenzie.

CANADIAN ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS:—President—Dr. J. G. Adami, Montreal. Secretary—Dr. George D. Porter, Ottawa.

CANADIAN HOSPITAL ASSOCIATION:—President—Miss C. F. Green, Belleville. Secretary—Dr. J. N. E. Brown, Toronto.

CANADIAN PUBLIC HEALTH ASSOCIATION:—President—Dr. T. A. Starkey—General Secretary Major Lorne Drum.

COLCHESTER-HANTS MEDICAL SOCIETY:—President—Dr. J. N. Reid, Windsor. Secretary—Dr. H. V. Kent, Truro.

KINGSTON MEDICAL AND SURGICAL SOCIETY:—President—Dr. R. W. Garrett. Secretary—Dr. W. T. Connell.

LONDON MEDICAL ASSOCIATION:—President—Dr. D. H. Arnott. Secretary—Dr. Edward Spence.

LUNENBURG-QUEEN'S MEDICAL SOCIETY:—President—Dr. W. N. Cochran, Mahone. Secretary—Dr. L. T. N. Penney, Lunenburg.

MANITOBA MEDICAL ASSOCIATION:—President—Dr. F. S. Keele, Portage la Prairie. Secretary—Dr. Jasper Halpenny, Winnipeg.

MONTREAL MEDICO-CHIRURGICAL SOCIETY:—President—Dr. C. F. Martin. Secretary—Dr. Hanford McKee.

NOVA SCOTIA MEDICAL SOCIETY:—President—Dr. James Ross. Secretary—Dr. J. R. Corston.

OTTAWA MEDICO-CHIRURGICAL SOCIETY:—President—Dr. C. H. Brown. Secretary—Dr. F. W. C. Mohr.

OTTAWA MEDICAL SOCIETY:—President—Dr. F. McKelvey Bell. Secretary—Dr. Omar Wilson.

PETERBORO MEDICAL SOCIETY:—President—Dr. G. Stewart Cameron. Secretary—Dr. E A. Hammond.

PICTOU COUNTY MEDICAL ASSOCIATION:—President—Dr. C. J. Miller, New Glasgow. Secretary—Dr. John Bell, New Glasgow.

ST. JOHN MEDICAL SOCIETY:—President—Dr. T. D. Walker. Secretary—Dr. William Warwick.

ST. THOMAS AND ELGIN COUNTY MEDICAL SOCIETY:—President—Dr. S. N. Dorland. Secretary—Dr. Leith.

SOCIÉTÉ MÉDICALE DE MONTREAL:—President—Dr. E. P. Benoit. Secretary—Dr. Ludovic Verner.

THE VALLEY MEDICAL SOCIETY:—President—Dr. I. A. Sponagle, Middleton. Secretary—Dr. V. F. Connons, Hantsport.

THE NEW BRUNSWICK MEDICAL SOCIETY:—President—Dr. A. F. Emory. Vice-President—J. S. Bentley. Annual Meeting, St. John, July 18th and 19th, 1911.

THUNDER BAY MEDICAL ASSOCIATION:—President—Dr. A. J. G. Macdougall. Secretary—Dr. C. C. McCullough.

WEST ELGIN MEDICAL ASSOCIATION:—President—Dr. Patterson, Rodney. Vice-President—Dr. Crane, Wallacetown. Secretary-Treasurer—Dr. Smith, Fingal.

WINNIPEG CLINICAL SOCIETY:—President—Dr. J. G. Munroe. Secretary—Dr. O. C. Dorman.

WINNIPEG MEDICO-CHIRURGICAL SOCIETY:—President—Dr. Prowse. Secretary—Dr. John Gunn.

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